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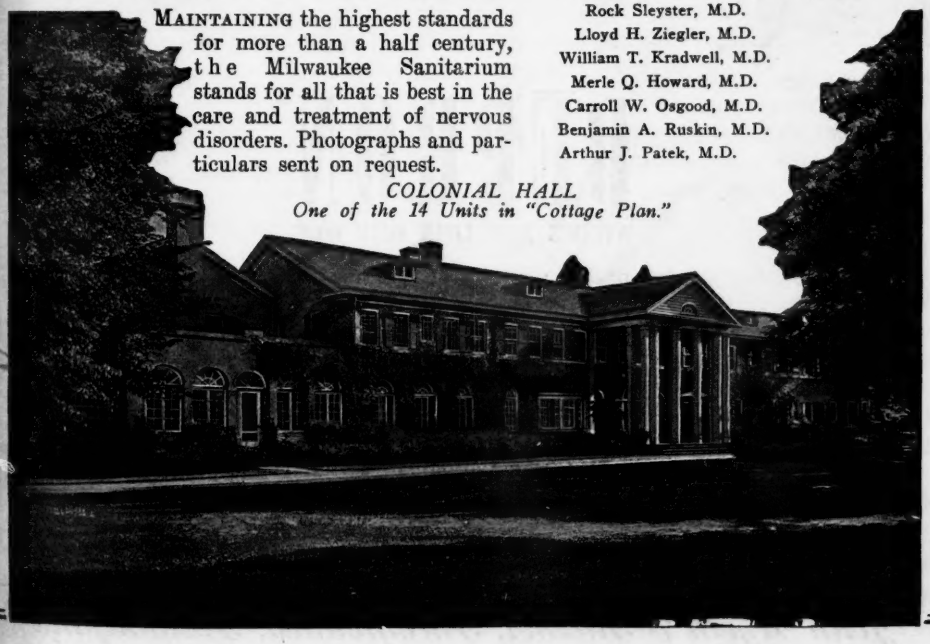

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ILLINOIS MEDICAL JOURNAL

THE OFFICIAL JOURNAL OF
THE ILLINOIS STATE MEDICAL SOCIETY

VOL. 79 OAK PARK, ILL., JUNE, 1941 No. 6

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*Deceased

Editorials

THE GERIATRICIAN

We have seen during recent decades, a marked change in the average age of the American population. Forty years ago we were informed that the chance on the part of the newborn to reach the age of 65, was 40%, while today this chance has been increased to 60%. Even more recently we have been told that the chances today for an infant to reach the age of 65 are greater than the chances in 1911 for an infant to reach the age of 50. From all indications, these increasing age trends should continue during the next decades.

In medical circles, it has long been known that the care of the aged has been almost as difficult as that of our infants. With the ever increasing number of people reaching advanced ages today, it is necessary for the medical profession to give greater consideration to their medical care. Not merely medical care, but likewise a better consideration is essential along the line of dietary needs, activities and other matters of equal importance to add to their comfort.

When the Social Security Act was placed in our statutes and provisions were made for old age assistance through the State Department of Public Welfare, statisticians informed those responsible for the operation of this portion of the Act, that there would never be a time when more than 75,000 clients would be receiving aid in Illinois. Plans were made with that maximum figure in mind, yet in 1941 we are informed that more than 145,000 old age assistance clients are receiving aid, with applications on file from several thousand others who have attained the age of 65 years. It seems quite logical that this number will gradually increase to a new high within a few years as the life expectancy of the average individual of 65 is today reckoned as 12 years.

As time marches on, the problems relative to the care of the aged will increase materially; and it will be increasingly more difficult to give

them the attention which is deemed most essential to their comfort and best interests.

Many practitioners of the present era can well remember the development of pediatrics, orthopaedics, radiology and a number of the other present day important branches in medicine. It seems quite logical to believe that within a relatively short time we will see an increasing number of men in medicine devoting their entire time to the care of the aged, or to the subject of geriatrics.

There are certain types of disease, largely of a degenerative character, which will be of special interest to geriatricians. Cardio-vascular diseases will be an important consideration, as it is in our consideration of patients in all other age groups.

The cancer problem will likewise be an important one, as the incidence of cancer increases as age advances. Many of the cancer problems will begin with a consideration of pre-cancerous lesions so prevalent among the aged, which may be alleviated easily with the proper early treatment. Cancer research may eventually change the picture materially in regard to the incidence of cancer, but at this time we are told that the chances of developing cancer are one in seven for white females and one in nine for white males.

Diabetes is a problem of great importance in our geriatric consideration; although when it develops in the aged, diabetes is usually more satisfactorily controlled than when it develops at an early age.

The respiratory diseases must be carefully considered as many of our aged patients will eventually succumb to this type of disease. Accidents and more particularly, fractures of the hip and automobile accidents, must be given proper attention. Cerebral accidents, hemorrhage or emboli, will affect a considerable number in the aged group.

Internal accidents such as strangulated hernias, and internal hemorrhage, will be seen occasionally, and we must realize that no age group is immune to appendiceal infections. In the male, prostatic disorders may require prostatectomy or resection, and will be seen in greater numbers as age increases.

It is quite obvious from this brief review, that the geriatrician should have many problems, equal in number perhaps to those of the pediatrician and other specialistic groups. It will be necessary for him to confer with the internist, the surgeon, the radiologist and others, if he gives proper consideration to the problems arising in his specialty.

In one of the last editorials written by Dr. Charles J. Whalen for the Illinois Medical Journal, he referred to the increasing responsibilities of the young who, each year, are assuming more responsibility for the care of the aged. Perhaps when we see more physicians interested in geriatrics, we will find many more people in this country self-supporting and not in need of federal and state aid when they attain the age of 65.

MEDICAL BENEVOLENCE

For many years Dr. John S. Nagel who has served as a member of the Council of the Illinois State Medical Society for nearly twenty-five years, has had in mind the development of a plan under which disabled members of the Society, the widows or widowers of former members, would receive some monthly benefit while in actual need. At the annual meeting held in May, 1940, the House of Delegates approved the report of the Committee on Medical Benevolence and recommended the immediate development of a system such as had been recommended by the Committee. All details were left to the discretion of the Council.

A committee of three, one to serve for one year, one for two years and the third for a three years term, was named by the President and approved by the House of Delegates; then after 1941 there was to be one member of the committee elected each year for a three year term. After a number of conferences had been held and the Council had given the subject much consideration, the present plan of conducting this benevolence work was approved and placed in operation.

The Council appropriated $5,000 as a nucleus for the Medical Benevolence Fund. It was proposed that an annual assessment from the membership dues be added to the fund so that eventually only the income from invested funds would be necessary to carry on this important work.

The Committee on Medical Benevolence has publicized the plan, elaborating on the purposes and aims, giving complete information to the

Charles H. Phifer, M. D.
President, Illinois State Medical Society,
1941-1942

membership through the Illinois Medical Journal, the Bulletin of the Chicago Medical Society, and through other county society bulletins during the past year.

The first annual report of the Committee was presented before the House of Delegates at the 1941 annual meeting, and the Reference Committee to which the report was referred for study and a report to the House of Delegates at the second meeting, heartily endorsed the work and approved the recommendations made by the Committee.

The Woman's Auxiliary has made medical benevolence one of its principal objectives, and although they had a late start during the past fiscal year, they did accumulate approximately $1,200.00 for the fund, and they propose to do much more during the coming year. It is quite interesting to note that during the first year all beneficiaries approved were women.

The plan adopted by the Illinois State Medical Society for medical benevolence is quite similar to the one used in the Pennsylvania State Medical Society. The Council and the special Committee on Medical Benevolence received much aid from Dr. Walter F. Donaldson, Secretary of the Pennsylvania Society. At one time during the year, Dr. Donaldson appeared before the Council to give us detailed information on the Pennsylvania plan and answered many questions regarding procedure.

The Benevolence Fund is subject to an annual audit, but no reports will mention names of beneficiaries, merely giving the additions to the fund. Payments from the fund are made only to beneficiaries, and no extra charges will be made against the fund for any other purposes whatever.

It is generally believed within the Illinois State Medical Society that this is one of the most constructive projects developed in recent years, and one which will be of more value as time goes on.

Probably no tuberculous spine ever heals completely and a focus always persists which may become active under unfavorable circumstances. Spinal fusion tends to lessen the probability that such conditions will arise and it also tends to hasten the healing process. J. A. Key, M.D., Jour. Bone and Joint Surg., July, 1940.

A REPORT ON THE 1941 ANNUAL MEETING

The 1941 annual meeting of the Illinois State Medical Society was held at the Palmer House, Chicago, on May 20, 21, 22, and will go on record as one of the most successful meetings in the history of the Society. With this meeting the second century was begun, and it was indeed a most satisfactory beginning as the largest registration of all time was recorded.

All meetings were conducted in the spacious convention quarters of the Palmer House with 94 technical and 46 scientific exhibits on display there. The program this year was similar in arrangements to that of the 1940 Centennial Meeting held in Peoria with joint sessions each morning and individual section meetings during the afternoons. The Orations in Medicine and Surgery were scheduled as a separate session on Tuesday evening, May 20th, with John H. Musser of New Orleans presenting the Oration in Medicine and Owen H. Wangensteen of Minneapolis giving the Oration in Surgery. The attendance for this evening session was over 800, and taxed the facilities of the Grand Ballroom of the Palmer House.

With Dr. J. P. Simonds as Director of Scientific Exhibits the finest array of scientific material ever displayed at an annual meeting was shown in the Red Lacquer Room. The scientific exhibits attracted a great deal of attention and the room was well crowded during the entire meeting.

The technical exhibits were very popular also with hundreds of physicians present during the entire meeting. It was most remarkable that no complaints were registered by the exhibitors, and they were all more than pleased with the arrangements and the facilities made available for them.

The annual President's Dinner held on Wednesday evening in the Grand Ballroom, was one of the outstanding functions of the annual meeting. James H. Hutton, as immediate Past-President, acted as toastmaster, introducing all Past-Presidents who were present, then introducing L. E. Day, Chairman of the Council, who made the presentation of the President's Certificate to J. S. Templeton, President of the Society.

Colonel Paul G. Armstrong, State Director of

Selective Service, made a fine address in which he personally thanked the many hundreds of Illinois physicians who have been acting as examiners for local boards, members of medical advisory and appeal boards throughout the state. This was most interesting because Colonel Armstrong asked for permission to make this address to show his appreciation of the fine work of the medical profession in Illinois as a contribution to the program for national defense.

Hon. Hugh H. Clegg, Assistant Director, Federal Bureau of Investigation, Washington, D. C., gave an address on "The F.B.I. Program to Suppress Fifth Column Activities" which was most interesting and informative, and greatly appreciated by all present. Interesting stories of the work of this important governmental bureau were related to show the type of activities on their program.

Officers of the Illinois State Dental Society and the Illinois State Pharmaceutical Association were guests at the President's Dinner and during the evening telegrams extending the felicitations of adjoining state medical societies were received and read.

The large registration force was very busy throughout the meeting, and a tabulation of the registrations gave the following information:

3,134 members
357 internes and medical guests
68 medical students
286 auxiliary members
334 exhibitors

the total registration being 4,179, by far the largest ever recorded at an annual meeting in this state.

The House of Delegates held two meetings, Tuesday afternoon, and Thursday morning. All annual reports were published in the Handbook and mailed to members of the House before the meeting, giving adequate time for careful study. The reports were referred to the proper reference committees which held meetings, then submitted their reports which were acted upon at the meeting on Thursday morning.

At the close of the business session on Thursday morning, Charles H. Phifer, Chicago, was installed as President for the coming year by the retiring President, J. S. Templeton. E. H. Weld of Rockford was elected President-Elect; H. Prather Saunders, Chicago, was elected First Vice-President; Fred H. Muller, Chicago was chosen Second Vice-President, and Harold M. Camp, Monmouth was elected as Secretary-Treasurer, these offices being combined by the House of Delegates.

The next annual meeting will be held in Springfield subject to the approval of the Council after the usual check-up on facilities has been made.

It was the unanimous opinion of all present that meetings in Chicago should be scheduled more often, and that nowhere in the United States can more successful meetings be conducted than in our second largest city.

Complete details of the meeting with the transactions of the House of Delegates will be published in the July, 1941 issue of the Illinois Medical Journal.

SOCIALIZED MEDICINE

From The Tribune, Hastings, Nebraska

One of the most treasured objectives of the parlor pinks who infest the nation is to sell the American people on the idea of socialized medicine.

Once put into effect, they claim, socialized medicine will put a bloom on every child's cheek and bring longer life to all. That it will also provide the politician with a strangle-hold on the medical profession and consequently on your health and welfare is something they fail to mention.

But forgetting the latter for the moment, what is the health experience of nations where bureaucratic control of medicine is in force? Such information is difficult to get because the totalitarian nations aren't releasing such statements these days.

However, we have run across statistics pertaining to the death rate from diphtheria in 1936 in Germany, England and the United States.

There were 11.5 deaths per each 100,000 population in Germany, 8.6 in England and only 1.5 in this country. In that connection, it is interesting to note that there is one qualified physician for each 767 people here as against one for each 1,069 in England, 1,307 in Germany and for each 1,569 in France.

In this country, the government doesn't tell young men and women whether they must be physicians or ditch-diggers. Opportunity for the individual depends upon himself, his ability and his circumstances. That is true of life in general and it is true of medicine.

The system works well. Why try to alter it?

Only the most rigid contagious disease technic provides a barrier and prevents the spread of tubercle bacilli from hospital patient to student nurse. J. A. Myers, M.D., et al, Annals Intern. Med., Nov. 1940.

MEDICAL ECONOMICS

H. M. Camp, M. D.
E. P. Coleman, M. D.
J. H. Hutton, M. D.
Ralph Peairs, M. D.
R. K. Packard, M. D.

Edited by the Committee on Medical Economics
of the
Illinois State Medical Society
E. S. Hamilton, M. D., Chairman
Kankakee, Illinois

C. H. Phifer, M. D.
C. B. Reed, M. D.
C. B. Ripley, M. D.
C. E. Wilkinson, M. D.
W. M. Hartman, M. D.

Address all letters and communications to the Chairman.

Attendance at the annual meeting of the Illinois State Medical Society called to the attention of the members some of the more important economic problems before the medical profession. Undoubtedly the rank and file of the profession displayed the most interest in the work being done in Selective Service. This is in part because so many of the medical profession are assisting in this work as patriotic service to their country without cost to the government. They are anxious to know how well their work is being done and to what degree their services are appreciated. Deeper than this is an interest in the future of their nation and the progress that is being made in preparation for defense of the nation, which at times seems most urgent. They were interested to hear the expressed appreciation of Colonel Armstrong for the work of the medical profession in Illinois and his opinion as to its high quality. The talk of Major Bier of Washington in the head office of the Medical Division of Selective Service gave data and information which explained some of the results attained so far in the examination of half a million selectees. Also he was most kind in his appreciation of the work of the medical profession thruout the entire United States. He realized the importance of the work they are doing and commented on the fact that they are donating their service.

The impression was created that there will be a further call for physicians in the armed forces of the United States, and while no definite number was mentioned it was urgently suggested that all men within the draft age seriously consider joining the Medical Reserve Corp, so that there will be an ever present well of medical men ready to aid in the upbuilding of an adequate army. While at present the admission of men above 40 is not encouraged, it was admitted that there was quite a probability that the age limit would be raised in the event that we actively entered into war and that most of the men so made eligible would probably be placed in administrative stations. One left the meeting with the feeling that many more medical men would be needed in the coming few years and the hope was expressed frequently that the voluntary joining of the reserve would make any thought of drafting the medical profession unnecessary.

The President of the State Society, Dr. Charles Phifer, who has been intensely interested in the care of the indigent in Chicago the past eight years, presented a fine idea for the control of work in this ever increasing field of work, which now includes in addition to the indigent, the old age pensioners, the blind, and the widows. All of them are a difficult problem to the medical profession, who are desirous of extending to them the best attention possible, but do not feel they are being adequately compensated under the present rules and regulations, too often promulgated by non-medical men, who make the rules without either consulting with the medical profession, or without paying any attention to their advise, if they do consult. In addition there is a continuous attempt being made to extend socalled state medicine to include venereal, cancer, tuberculosis, crippled children etc. clinics in various parts of the state. To control these various agencies and to inform the members of the component county societies as to what is being done elsewhere, he proposed that a Committee be set up in the State Society to investigate all of these various problems and to serve in an advisory capacity to the rest of the state, thru a similar committee to be appointed in each county society to serve their local medical profession in the same manner that the state committee serves the entire state. Any information the state Committee has, would be forwarded to the local one, so that when any problem arose that came within this field, it would be referred to this committee, which would have time to investigate and a place to get all the information necessary in arriving at the proper decision as to the course to pursue. When

presented to the House of Delegates, Dr. Phifer's suggestion was adopted. The success of this method of handling the care of the needy will depend on the cooperation of the officers of the county societies, who must present it to their members and when and if adopted see that the proper committee is appointed from their members to do the work. Men of mature judgment and considerable experience are desirable, so that they can make the proper decisions without fear of criticism from either the medical profession or the laity. If we will carry this plan thru many of the new ideas pushed thru in the past years can be sidetracked to the mutual advantage of both the medical profession and the public.

The attendance at the annual meeting was the best in the history of the society. All those who attended were unanimous in the opinion that the medical profession of Chicago had outdone itself in preparation for the affair. The Palmer House made an ideal place to hold the meeting and the men downstate hope that Chicago will invite them again in the near future.

Next month this column will probably be under new management, as the present Chairman has taken on a new job. It is too early to announce the new Chairman of the Committee, but an effort will be made to obtain a much more capable one, who can both carry on the work of the retiring member as well as expand the field of usefulness of this Committee and the Column. Having attended it since its birth, the writer feels a little like its father, and he can assure his successor that he will always be interested in its work and will be willing to aid in any feeble manner that he may be requested. Again, I wish to thank all of you who have either assisted me by your efforts the past seven years or encouraged me by your expressed interest in the work we have been trying to do.

E. S. Hamilton, M.D., Chairman

UNQUALIFIED SUCCESS

(Wall Street Journal)

A woman who had given a dinner party met her doctor on the street the following day.

"I am so sorry, doctor," she said, "that you were unable to come to my party last night. It would have done you good to be there —"

"It has already done me good," he broke in tersely. "I've just prescribed for three of your guests."

ILLINOIS STATE MEDICAL SOCIETY
COMMITTEE ON MEDICAL BENEVOLENCE

The House of Delegates of the Illinois State Medical Society at its Annual Meeting held May 21-22-23, 1940, voted that certain changes be made in the Constitution and By-Laws to enable the Society to establish a Benevolent Fund for indigent physicians and their widows.

The plan adopted very closely resembles the one which has been operating in Pennsylvania for the past thirty-seven years.

We are publishing herewith the personnel of the Committee together with an outline of the purposes and the power given the Committee to carry on this work.

Committee on Medical Benevolence, John S. Nagel, Chairman, 185 N. Wabash, Chicago, Ill. Charles H. Hulick, Shelbyville; Clarence H. Boswell, Rockford.

PURPOSE OF THE COMMITTEE

1. To create a Benevolence Fund:
   a. Through allocation of $1.00 each year from dues of each member.
   b. Through gratuities, endowments, etc.
   c. Through the efforts of the Women's Auxiliary to the Illinois State Medical Society.

2. To investigate cases of alleged financial difficulties on the part of members, their widows or widowers.

3. When found worthy, to appropriate regular monthly benefits not to exceed $25.00 to $30.00 per month in any one case. When deemed advisable, may appropriate more over a short period of time when rehabilitation seems probable.

4. To designate the component society secretary in each county as the county chairman to submit applications for members for benefits, then to see that a questionnaire form is properly executed to give the desired information relative to the case. The councilor of the District may assist the Committee in submitting names of members, their widows or widowers, when he believes the individual is entitled to the benefits herein prescribed.

5. When it is the opinion of the Committee that the case is a worthy one and benefits should be allowed, the Chairman of the Committee

should notify the Secretary of the State Medical Society, stating the amount agreed upon as the regular allowance, stating the intervals at which the benefits shall be paid, so that proper vouchers may be submitted.

THE INVESTIGATIONS

When it is reported to the Committee that a member, widow or widower of a member is needy and unable to secure the necessities of life, a questionnaire form shall be submitted from the Secretary's office asking for the following information:

1. A brief social history of the applicant, past and present. Data concerning reasons for being in want whenever possible, and all other pertinent information which will enable the Committee to take the proper action.
2. A brief financial history including present assets and income, sources and amount.
3. Disbursing of present resources (rent, food, clothing, etc.).
4. Statements as to probable permanency of the present distress.
5. Any possible source of assistance such as:
   a. Relatives .....
   b. Friends .....
   c. Fraternal Organizations .....
   d. Insurance .....
   e. Pensions .....
6. Have all sources of help been solicited?
7. Additional information. Means by which influence might be exerted to find employment or some other source of income. Is there a possibility of rehabilitation? (With moderate financial assistance over a short period of time, would it be possible for the applicant to become self-supporting?)

PROCEDURE

Requests from members, their widows or widowers for assistance, if submitted to the Secretary, shall be referred to the Committee promptly. At the same time a questionnaire form will be submitted to the applicant or to the county society secretary, or to the Councilor if the information is submitted by him. All possible information which will aid the Committee in determining the eligibility for assistance, the amount actually needed, or if rehabilitation through short time payments is probable, should be submitted promptly.

Each case will receive the proper consideration by the entire committee which shall pass final judgment on:

1. Eligibility for aid.
2. The amount of aid.
3. Whether for a short time or permanently.

The decision of the Committee shall be final and there will be no higher authority within the Society to whom appeals from decisions of the Committee can be referred.

In the event that additional income is received and the individual is no longer eligible for further benefits, the county society secretary or the Councilor submitted the data, should notify the Committee of these facts promptly.

As soon as a reasonable amount is accumulated in the Benevolence Fund, only the income from the Fund shall be used to pay benefits.

The Medical Benevolence Fund shall be subject to an annual audit as are other funds of the Illinois State Medical Society, although merely the amount of the Fund, the payments made during the year, the additions to the Fund, and the interest from investments shall be mentioned. The names of beneficiaries shall not appear in the annual audit, nor shall they be mentioned in the annual report of the Committee to the House of Delegates.

The Secretary of the State Medical Society shall maintain a separate file for all correspondence relative to beneficiaries, amounts paid, investigations and minutes of meetings of the Committee, which shall be a closed file and not open to inspection by others than members of the Committee, the Auditor, or a regularly designated Committee of the House of Delegates.

As the regular vouchers of the Illinois State Medical Society are paid through the State Bank and Trust Company of Evanston, all funds for benevolence purposes shall be maintained in another bank and payments for benevolence purposes shall constitute the only vouchers drawn on these funds. The council of the Illinois State Medical Society has allocated the sum of $5,000.00 maintained in the National Bank of Monmouth for several years as a Certificate of Deposit, as the nucleus for the Benevolence Fund, and payments shall be made from this fund on this bank.

NOTE: The above report and procedure was

presented to the Council of the Illinois State Medical Society in regular session on August 4, 1940, by the Chairman of the Committee on Medical Benevolence. The report and procedure were approved, and the Committee instructed to make the necessary arrangements to function immediately. The Council was authorized by the House of Delegates at the 1940 annual meeting to approve a method of procedure so that the work could be started with a minimum amount of delay.

TB PATIENTS UNDER POLICE GUARD — LAW IS INVOKED

Under police guard, 26 men and 10 women are being treated for tuberculosis in a wing of the Philadelphia Hospital for Contagious Diseases. There is a policeman standing at the door day and night to see that they do not run away from the city's beneficence.

These patients are being subjected to compulsory hospitalization under a 30-year-old state law, which for the first time is being invoked in the city's war on tuberculosis.

They were "sentenced" to treatment at the hospital by Judge Charles L. Brown of the Municipal Court. The complainant was the division of tuberculosis of the city department of health.

In each case an agent of the division testified that the defendant repeatedly disobeyed orders to place himself under medical supervision and observe certain hygienic safeguards.—*The NTA Bulletin*, March, 1941.

NEW WRINKLE

Group insurance is now being written, according to the current issue of *Business Week*, for the trucking company members of a large Chicago motor freight association. The policy covers hospital expense, surgical fees, sickness, and accidents.

This represents a new wrinkle in commercial group insurance. The insurance company agrees to write the insurance at group rates below individual rates for comparable coverage. The employee makes his own decision about buying, but if he decides in favor of insurance he gets his own policy and tells his employer to take the premium out of his pay.

Other loosely knit groups of individuals such as drug store chains, the retail hardware association, and the American Institute of Decorators are also arranging for similar group policies for employees of members, even when the individual member-employer operates only a small business with a limited group of employees.

The development of commercial insurance plans to cover hospital expense and surgical fees has obviously only begun but may reach proportions that will completely eclipse nonprofit community experiments in sickness insurance of this type.—*Minnesota Medicine.*

Correspondence

POSTGRADUATE COURSES IN OBSTETRICS AND PEDIATRICS TO BE REPEATED AT THE UNIVERSITY OF ILLINOIS, COLLEGE OF MEDICINE

The Departments of Obstetrics and Pediatrics of the University of Illinois cooperating with the staffs of the medical schools of Chicago and the State Department of Public Health, will again offer to physicians of Illinois an intensive one week's course in obstetrics and pediatrics at the Research and Educational Hospitals. The course begins each Monday morning at nine o'clock and ends at five o'clock Friday evening with the liberty to attend dispensaries of choice or visit other institutions on Saturday. The courses will be given for only four weeks, starting June 16th and 23rd and July 7th and 14th.

Staff members of all Chicago Medical Colleges are participating in giving the course and will include such Obstetricians and Pediatricians as Doctor W. C. Danforth, F. H. Falls, Joseph Baer, W. H. Browne, H. C. Hesseltine, W. J. Dieckmann, Charles Newberger, Julius Hess, H. G. Poncher, Stanley Gibson, J. A. Bigler, D. N. Buchanan, Arthur Parmelee and Herbert Schmitz. Opportunity is given for individual consulation work with many of these men.

The registration fee of $10.00 is the only fee required. Application should be accompanied by the registration fee and should be sent to Mr. G. R. Moon, 1853 West Polk Street, Chicago, Illinois.

APPLICATION BLANK

Name ..... Age .....
Date of Graduation .....
Street Address .....
City .....
Member of County Medical Society
Yes ..... No .....
1st choice — week of .....
Do you wish a room reserved for you at the YMCA? .....
2nd choice — week of .....
Is your wife accompanying you? .....
3rd choice — week of .....

Excellent living accommodations can be obtained at the nearby students' Y.M.C.A. at reasonable rates. Fee $10.00 — Make checks payable to University of Illinois, College of Medicine.

Mail application to G. R. Moon, Registrar, 1853 West Polk St., Chicago, Illinois.

Better dietary habits especially during the past twenty years, have enhanced inborn resistance to all diseases including tuberculosis. Fred H. Heise, M.D., Amer. Rev. of Tuber., Feb. 1941.

PHYSICIAN DECLARES PTOMAINES IN FOOD DO NOT CAUSE ILLNESS

"Ptomaine poisoning doesn't exist," Dr. Dorothy V. Whipple, Washington, D. C., declares in *Hygeia, the Health Magazine.* She explains that illness caused by eating food that is not wholesome is not due to the presence of ptomaines in the food and should more accurately be termed food poisoning than ptomaine poisoning.

"Ptomaine," the physician continues, "is a word for substances which form in decomposing foods. There are many different compounds which come under the general term 'ptomaines,' but they all have in common the property of being made by bacteria out of decomposing protein. Some of the ptomaines have distinct odors and tastes, which are largely responsible for the characteristic flavor of putrid food. . . However —unbelievable as it may seem to many people — the ptomaines in such food, even when the food is eaten in large quantities, produce no ill effects in the human body."

Doctor Whipple lists as the cause of food poisoning: (1) The food eaten may itself be naturally poisonous; (2) bacteria may have made poisonous substances in once wholesome food; (3) chemical poisons may have been accidentally introduced into the food; or (4) bacteria may have been allowed to grow in the food.

Regarding the first cause of food poisoning, Doctor Whipple states, there are poisons from the plant world that are mistaken, though rarely, for similar-appearing edible substances. Some are poisonous at all times, . . . others are poisonous only at certain times of the year. . . . Poisons exist in animal foods as well as in plants . . . . Food poisoning, due to naturally occurring poisons such as these, occurs, but the number of cases of such poisoning in the United States is small."

A more severe type of poisoning is that produced by bacteria growing in the food. This poisoning is known as botulism, since it is caused by Clostridium botulinus (rod-like bacteria which form a toxin). "These bacteria do no harm," Doctor Whipple declares, "but when they are allowed to grow in food for a period of time they elaborate a poison which is harmful to human beings. . . . The poison affects the central nervous system. . . . Botulism is a serious disease. In some epidemics, as high as 100 per cent of those attacked died; seldom is the fatality less than 50 per cent."

In regard to chemical poisons in food, Doctor Whipple says: "Many substances can get into food, either accidentally or intentionally, and if in sufficient concentration will cause illness. Among the more frequent of these substances are lead, arsenic, cyanide, and some of the alkaloid poisons. If a large amount of any one of these substances is taken, the immediate illness is usually characterized by nausea and vomiting. . . . If only small amounts of these poisons are taken, no symptoms will develop unless the small amounts are repeated frequently over a period of time. In such cases signs and symptoms of chronic poisoning may develop."

In reference to the frequency of such illness, the doctor states that "a long list of harmful substances have at one time or another been found in food, but such contamination is now relatively infrequent."

The most frequent source of food poisoning, according to the author, is the growth of bacteria in food. She says, "Occasionally bacteria producing disease are introduced into food. Many bacteria find food a suitable place in which to grow, so that a few organisms accidentally dropped into food may become many thousands by the time the food is eaten. The germs which cause the illness, correctly spoken of as food poisoning or food infection, belong to two types. One is the salmonella group of organisms. The other is the staphylococcus group of organisms and is most frequently found in milk products. Meat, fish, and poultry are the foods most frequently infected by the salmonella group of organisms. The animal may have been infected before it was killed, or its flesh may become infected afterward."

Doctor Whipple says that any food that is handled a great deal is more apt to be harmful than food eaten without such handling, but she adds, "If infected food is thoroughly cooked, all harmful bacteria will be killed and the food can be eaten with impunity."

The physician concludes with the warning, "Foods likely to be confused with poisonous varieties should not be used unless complete dependence can be placed on the knowledge of those gathering the food.

"Clean, fresh food presents few hazards, but stored foods, preserved foods, foods delayed between producer and consumer are those in which constant vigilance is necessary to avoid contamination. Meats should be taken from healthy animals, cut up and handled in a careful manner by butchers free from disease; bakery goods should be prepared by healthy bakers in clean kitchens. Food must be guarded in transportation and sold in markets and shops in such a way as to be protected from flies, rats, dust, and unnecessary human handling. The health of food handlers must be carefully guarded and the sanitary condition of eating places must be maintained by frequent inspection by authorized agents. The danger of eating at roadside stands, or improvised eating places where even a casual glance indicates that sanitary facilities are not adequate for health protection, cannot be overemphasized."

HOPE IT WAS A SOFT HAT

Mike had just been operated on and was placed in a ward between two other boys from the Emerald Isle. After he had come out of the ether and was still sort of woozy, the Irishman on one side yelled over to the third one saying, "Pat, how was your operation?" Pat replied, "Sure, they forgot to remove the sponge from me and they had to reoperate and take out the sponge. And how is yours, Jim?" To which Jim replied, "They forgot the scissors in me They had to reoperate and take out the scissors."

About that time Mike's doctor stuck his head in the door and hollered, "Anybody see my hat?" and Mike fainted.—*Davis Nursing Survey.*

Original Articles

ORGANIZATION AND MEDICINE

JAMES SCOTT TEMPLETON, M.D.*
PINCKNEYVILLE, ILLINOIS

Organization is distinctly the work of man, a mark of distinction that places man in a class to himself.

Beasts, fowls or fish never organize but gather in herds, flocks or schools. They mate, produce and protect ther offspring as best they can but do so in a feeble way.

It is given only to men to organize to provide for protection, hunger or future wants of their offspring. The parent bears will cooperate to protect their cubs but fail to interest others of their kind in opposition to a common enemy.

From the days of the Garden of Eden, man has been organizing, sometimes successfully, other times failing to succeed. Some might question the statement that monkeys do not organize and that man's efforts of the early age accomplished but little more than bands of monkeys. To me, there is a wide difference. Men, from their beginning, laid up sinews of war, went into conflicts with a definite purpose and fought for what they considered a principle as well as for protection.

One of the best examples of organization of early days was that of Moses, who commanded and led the children of Israel out of the wilderness. For forty years the twelve tribes, through all kinds of tribulations, kept faith and accomplished their goal. They had a purpose and were faithful. What happened after they succeeded? They became selfish, quarreled and thus broke up their organization. Mind you, it was not opposition from without, but hate, envy and bickerings from within that broke up what could have been one of the greatest organizations of all time.

Later in history, we find organizations serving mankind in two of the greatest cities of the world, Rome and Athens. Many times they were conquered and almost demolished by the Barbarians, yet, despite their apparent destruction, sparks of culture survived. Ideals of the family home life were not all quenched and in time Rome and Athens would return to their former splendor. Looking back over the hundreds of years that these cities survived, regardless of the enemies about them, it will be noted that their most destructive enemies were those who grew up within their own gates. Their foundations were undermined by their own progeny, youths growing up seeking their own pleasures, forgetting the sound principles that had sustained and rejuvenated their organization through many dark, dismal seasons. Family life was not cherished, slavery became popular and many other things flourished that cast gloom and sorrow over the once prosperous and happy municipalities. Not only were Italy and Greece benefited by these cities, but other nations of the world profited. In fact, all the good things known to medicine during those early centuries were many times crushed and apparently forgotten. But the smoldering spark would rekindle and, through the influence of organization, not only prevailed in these great cities and surrounding country sides, but were passed along to the new born municipalities. The principles of Hippocrates and of many other men of hundreds of years ago who believed in organization on a sound, enduring basis, kept the ideals we now cherish and cultivate, from being crushed and buried from the face of the earth. Emigration from these great cities carried the idea of organization to Spain. Nurtured there, the idea of finding a near way to the West Indies was born. Organization again came to the front and resulted in the discovery of America by Christopher Columbus. The beginning of a new map of the World.

Countless efforts were made to colonize the New World before a successful organization was accomplished. One company after another came and returned or disappeared entirely. Colonies similar to the one which landed at Plymouth Rock were organized and united to form one of the greatest organizations ever known on the face of the earth, THE UNITED STATES OF AMERICA.

The liberty enjoyed by our citizens is known the world over. If we should extend the hand of hospitality to the oppressed of the world, our ports would be flooded with immigrants. We need have but one fear. Our organization is too great, our citizens too loyal as matters stand today, to fear the barbarian attacks of other nations, but we must look to and fight the

*President's address, 101st Annual Meeting, Chicago, May 20-22, 1941.

enemies that would, if allowed, grow up in our midst. Insidiously and stealthily they would attack the vitals of our organization from within.

The first thought of this great organization is liberty, — liberty to organize for the protection of our homes — our families, our ideals of personal life, including our religious beliefs, our mode of worship — in fact, our every day way of living so long as it does not interfere with the privileges of others or tend to lower the standards of life among our people. It is to be regretted that in many cases organization is necessary and not all organizations are helpful, yet, the history of the world bears us out in that much can be done by organization if such is founded upon the sound principles of integrity, kindliness and respect for the rights of our fellow men.

We have cast aside many of the habits, customs and beliefs of our pioneer life. We have changed our way of living to conform to the demands of improved civilization. Our way of travel, our educational systems and even our mode and manner of worship are not as they once were. Yet with all these changes we have retained our liberty of thought, the sanctity of our homes and free speech. We may protect our homes and families from all evil that is visible, yet we must be on the alert for the invisible that creeps into our homes unrecognized. We must not allow the foundation of our family home life to be destroyed. This is the bulwark of our liberty-loving nation.

Among other vital things that have arisen in our land of liberty is the family doctor. From the beginning of our organized nation, our people have come more and more to love, believe and rely upon their family physicians, who are parts of a great organization, an organization now almost one hundred years old. Efforts were made previous to eighteen hundred and forty-seven to form an organization but they were unsuccessful. Illinois and other States were already organized and were of great help when the American Medical Association was organized.

Previous to 1847, many great discoveries in medicine had been made, but for lack of general support the American people had not been receiving the full benefits of the efforts and accomplishments of the men who had spent days and nights at their desks in study and work. No man had worked harder than the laboratory man, the technician and the chemist and others who devoted their time and lives to experiments, all of which were for the benefit of humanity.

Jenner discovered vaccination for smallpox in 1788 and we learn from history that Admiral Berkeley made the statement in "The House of Commons" in 1802, fourteen years after Jenner had made his discovery that in the United Kingdom, 45,000 persons die annually of smallpox. The French Minister of the Interior said in 1911 that it is estimated that 150,000 people die annually in France of smallpox. Here was a lapse of over twenty years between the discovery of vaccine and the realization that something must be done to reduce the number of cases of smallpox in these countries. The medical profession was not organized.

The first use of general anesthesia by nitrous oxide was in the year 1800, but it was forty years before its usefulness was appreciated. Dr. Oliver Wendell Holmes and other organizers brought about its use in Obstetrics and Surgery. It was but a short time until its general use was relieving the sufferings of millions of the afflicted. Without the general use of anaesthetics, dentists, surgeons or any other specialists would be helpless. We now have no fear of chloroform, nitrous oxide or ether.

In 1847, the greatest hazard of childbirth was brought under control. Semmelweis demonstrated the contagiousness of puerperal fever. Organized medicine accepted his teaching and the lives of countless mothers have been saved to rear families. Also, organized medicine accepted the principles discovered and taught by Lister and Pasteur. Their adoption revolutionized medicine and surgery. Their ideas are foremost in the minds of every successful physician and surgeon today. The prevention of disease both in medical practice and sanitation has been brought to our present high state of efficiency by the acceptance of these by the medical profession.

The innovation of trained nursing by Florence Nightingale, which shortly followed the organization of medicine, was one of the most practical advances ever made. It brought about the teaching of nurses. The value of the nurse to the sick patient both in comfort and aid to recovery is inexpressible. They are now an indispensable part of the great work of the medical profession in relieving the ills of humanity. We find them in the home, the hospital, the school, the factory,

in the Army and in fact, everywhere that sickness or suffering prevail.

Medicine and surgery have been but a part of organized medical aims and conquests since 1847. Their work in sanitation, immunization and prophylaxis have probably spared more lives and contributed more to the peace and happiness of mankind than any other group of the professions.

Physicians are now living who remember how whole families of children, before the days of immunization, were taken from the home by diphtheria. The so called "membraneous group" frequently claimed its victims, — but only a form of diphtheria. Father and mother lived in constant fear of this commonly fatal disease. Organized medicine lost but little time with the program of immunity and of late years we have seen but little of this throat disease.

The immunization of the young against typhoid or enteric fever was seized upon by the medical profession and no time lost in saving the lives of many of the youth of this and other lands.

Sanitation approved and directed by organized medicine has not only saved millions of lives but has contributed to the pleasure and happiness of the nations of the world.

Prophylaxis has done much to produce contentment, secure health and prolong life. This is one of the basic principles of medicine which has not been overlooked.

Organized medicine today is not making any apologies. We have invested the talent intrusted to us a century ago and it has increased more than a hundred fold in life, health and happiness for the American family.

The work of the scientist has been greatly appreciated. His findings have been immediately investigated and if found not useful are discarded. If approved, they are passed on to the profession in general and are used for suffering humanity in every walk of life.

Those who have practiced medicine during the last forty or fifty years, realize more than any others, the great change that has come to pass in the medical profession. We briefly call to your attention the difference in maternal care. More than half of the expectant mothers of the early days had no medical care. They consulted their neighbor who had borne children and were given all kinds of advice, some good but some not scientific.

Present day maternal care includes constant medical supervision for all pregnant women. Every possible opportunity is given for the proper development of the child and for the safety of the mother. The new born babe is given the care which medical science has provided. Few are born in America who do not receive some of the advantages of modern treatment. More than one hundred thousand physicians are studying, practicing and teaching modern methods of bringing up children to preserve their health and giving them the opportunity of reaching maturity.

Our youth is not neglected. We are studying its problems and comparing methods of the past with present day teachings and advising it as best we can.

Late youth and middle life should require but little medical care. However, when needed, the medical profession of America is prepared to give them the best of modern treatment.

As one approaches the age of retirement, there is a greater need for medical care. The heart, the arteries and the kidneys are watched. Modern medicine has done much to relieve the suffering caused by the decline in the functioning of these organs.

Organized medicine is modern medicine. In olden times, when an epidemic broke out, it usually ran its course and hundreds would die in a day. According to records, there were so many dead in some cities, that they could not give the bodies a decent burial. Today, if an epidemic threatens, the whole profession becomes interested. The recent threatened epidemic of sleeping sickness in St. Louis is a good example. Modern Medical science was brought into use without delay, and the scourge brought to an end promptly.

Organized medicine has met every emergency decisively, either in time of war or in time of peace. Services running into millions of dollars are now being donated by the profession for our National work of preparedness.

It was similar in 1918. Millions of dollars in service were donated and volunteers for the Army were forth-coming until there was no lack of physicians for the boys in service.

In Illinois, the profession has served the Relief load on a fifty per cent basis, again do-

nating millions of dollars that all may have the necessary medical care.

Regardless of these facts, from the Christian Century of April 30, 1941, I quote:— "Today, about three-fourths of our people fail to get the medical care which they should, while nine out of ten receive inadequate dental care." Further, in the same article, it is explained that this is because groups of organized medicine fight national readjustment. It is not the medical profession that is fighting national readjustment. It is national readjustment which organized medicine wants.

Organized medicine is now studying many schemes for the readjustment of medical service and none of them are tainted with job holders' ideas.

We recognize the changing conditions of our times. We realize that some aspects of medical service must be changed. The question arises, "Who is the more capable of making the proper changes, the medical profession or those who have a job which is at stake and whose incomes are controlled by politics?

The majority and controlling force of the American Medical Association is the family doctor. He knows the financial condition of practically every home. He knows the needs of the children and does not believe that three-fourths of them are in need of medical care which they do not receive.

Legislation, if needed, should come after the medical profession, the guardian of the American home, to find places to help and adjust medical service to the needs of our people.

Many physicians, and organized medicine as well, are fully aware that our greatest problem today is to find plans whereby the poor, the middle class and the rich may each receive adequate medical care.

We are not responsible for those who spend their income frivolously, but we are responsible for those who toil and save for a rainy day. Our charges should be fair and our service should be prompt and high-class.

Organized medicine has done its duty these many years and I cannot see that it is going to shirk its duty now. We stand for a high class preparatory education, a high grade medical education and the best of hospital service. We require that only men of good character form our organization. We require service to humanity. We have the knowledge, the equipment and the skilled professional staff to give the people all the medical care they need. If they do their part, results will be forthcoming.

We are now giving the American people the best medical service in the world. *Let us continue and fear not.*

MENSTRUAL DISORDERS DURING THE ADOLESCENT PERIOD

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University of Wisconsin School of Medicine
MADISON, WISCONSIN

It is important to realize that the pre-pubertal, pubertal, and adolescent periods are somewhat inseparable because of their gradual and uneventful transition from one to the other. The adolescent phase refers to the transitional period between puberty and maturity. It is seen that the early pubertal phase and adolescent period can overlap and are not accurately determined.

The pre-pubertal period is often one of great activity in breast enlargement and genital development, which includes the external genitals and the uterus. There is marked development of hair in the axilla and about the external genitalia. There are changes in physical contour and mental state. These changes may be marked and produce profound mental and physical discomforture. I mention these changes merely to show that the ushering in of the menses is only one physiological manifestation of puberty.

At puberty, exaggerated growth in hair and breasts, abnormal increase of body weight, and menstrual irregularities may cause the adolescent girl no little emotional and physical upset.

Indeed, it is significant that many girls who have abnormalities in the pre-pubertal and pubertal periods may develop menstrual disorders in the adolescent period. In short, it may be said, the same physiological endocrine forces at work, which produce normally the secondary sex characters, changes in body contour, and initiate the menses, if acting abnormally, may carry through and produce disorders of menstruation in the adolescent period.

In the Northern parts of the United States, the onset of menses occurs between 12 and 15 years of age. The average is 14, and of course,

Read before Section on Pediatrics, Illinois State Medical Society, May 22, 1940, Peoria.

healthy girls occasionally begin menstruating before 12 and after 15.

Amenorrhea. Amenorrhea is not an uncommon disorder during the adolescent period. As to the etiology of amenorrhea, physiologists generally agree that mentrual function depends upon the presence of a normally functioning anterior pituitary gland, a normally developed ovary capable of responding to the anterior pituitary gonadotropic hormones and a normal uterus which responds to the stimulation of the ovarian hormones, estrin and progestin.

It is obvious that unfavorable conditions arising during the pubertal period which adversely affect the anterior pituitary gland may affect the appearance of the menses.

It has been further shown that pituitary gland stimulation to the ovaries, in turn initiating the menses, may be altered by a dysfunction of the thyroid, adrenals and pancreas and other ductless glands which disturb the vital metabolic processes. Further etiological factors of amenorrhea should concern constitutional and general diseases of childhood and diet regulation. In Germany it has been shown that an undernourishment of a large section of the female populace was followed by a widespread epidemic of amenorrhea. It has been definitely shown in the experimental animal that the ovary is sensitive to nutritional disturbances.

A study of these cases should entail a thorough history and a detailed physical examination, and such laboratory examinations as a basal metabolic rate determination; sugar tolerance tests; mapping of visual fields, and x-ray of sella turcica to show the size of the pituitary gland and to map out a tumor; blood and urine hormone studies; endometrial biopsies; and vaginal smear studies. In addition, it may be imperative to make a pelvic examination under anesthesia, if necessity demands, to establish the physical status of the pelvic organs.

To be sure, many of you do not have access to all these laboratory procedures but many of these procedures can be carried out by you. Many of you do have access to a competent gynecologist or pathologist experienced in endocrine work, who can help you in your studies.

The treatment of amenorrhea entails an attack upon the underlying cause found in an exhaustive study of the patient. The remedial measures should not entail dangers to gonadal function. Developmental defects should be corrected. All systemic and constitutional diseases should be eradicated. Diet regulation in the direction of a high caloric, well balanced, rich vitamin content, is paramount. The adolescent may develop an unhealthy mental status which should be corrected. In the obese, a gradual weight loss should be effected by restricted diet, exercise, and in some instances, a well regulated thyroid therapy. While in the underweight, a high caloric, nourishing diet, rich in vitamin content, is indicated.

Interestingly enough, the endocrine treatment is one of the most important. The average age of the onset of menstruation is 14 years. Not a few healthy girls with seemingly good prepubertal development begin menstruating after 15 years of age. It is in this group in which the history, physical examination, and laboratory aids add nothing significant, and the endocrine background appears normal, that hasty endocrine treatment is to be condemned. However, if the patient presents general underdevelopment and hypogonadism with amenorrhea, and the age is significant, then, endocrine treatment may be indicated.

Several therapeutic endocrine agents can be used:

1. *The use of thyroid extract* is seemingly indicated in hypothyroidism. The severity of the hypothyroidism may be checked not only by a basal metabolic rate determination but by cholesterol determinations. Many physicians feel that thyroid should be given empirically.

2. *The use of an estrogenic preparation* is a substitutional therapy, acting locally on the endometrium, thereby producing bleeding. The estrogens, such as theelin, amniotin, etc., have no effect upon the ovaries and probably depress the pituitary gland activity, as has been shown by animal experimentation. However, experience has shown that there are a certain number of cases in which estrogenic therapy has been beneficial. Possibly a quantitative estrogenic balance is set up in a patient with an estrogenic deficiency, which trips off the anterior pituitary response, which in turn activates the ovaries. The estrogenic substance does affect genital development.

3. *The administration of the gonadotropic substances* would seem to be the ideal treatment, certainly in those cases due to pituitary hypo-

function. I have had considerable experience with several gonadotropic preparations. Prephysin, which is made from horse pituitary, is available in two concentrations, 25 or 100 units per cc., distributed by the Harvey Company. The disadvantage of prephysin is that it usually causes inflammatory reaction due to the foreign proteins present. Armour and Ayerst, McKenna and Harris Laboratories put out dependable products. The gonadotropic principal in pregnant mare serum concentrate can be recommended in two preparations: Gonadogen by the Upjohn Laboratory is dispensed in dry tablets in sterile vials, with saline for solution at the time of injection. Gonadin from the Cutter Laboratory is an aqueous solution and must be refrigerated when not in use.

In short, it may be said that pituitary inadequacy may be substituted for by gonadotropic substances obtained from animal pituitary or the serum of pregnant mares. Hypodermic injections of these extracts are advised in series of 5 to 15 doses during the first two weeks of the menstrual cycle, beginning at the onset of the period, or at intervals beginning not oftener than every four weeks, to attempt re-establishment of cyclic flowing. Results are not achieved until several series have been administered. The dose must be individualized. Some patients are given 25 units of prephysin daily and respond, others need a higher build-up. Gonadogen must be individualized as to dosage also; some cases are started with 10 unit doses, others demand 20 units per dose, and as much as 300 units per cycle of therapy. Pregnandiol 24 hour urine specimens over a period of seven days, and vaginal smear studies may determine the justification for further treatment and the ability of the ovaries to respond.

4. *The anterior pituitary-like substances* or the concentrates of pregnancy urine are condemned in this treatment because they do not stimulate follocular activity, but there is every reason to believe that they cause follicular atresia with resulting partial or temporary castration.

Radiation to stimulate the pituitary is a distinctly hazardous procedure as it may remove the last vestige of function.

Currettage offers little hope as a therapeutic measure, but may help in establishing an index of function. Strenuous curettage should be avoided because of the already too scant endometrium.

Functional Bleeding. The functional bleeding in an adolescent girl may or may not present a serious problem. Doubtless, it is anovulatory type of bleeding. The failure of ovulation results in persistent, active, unruptured follicles, which may cause a build-up or a hyperplasia of the endometrium. It may be said, as I have pointed out in previous papers, that bleeding and the pattern of the endometrium can not be correlated. I have observed the endometrium, atrophic or castrate appearing, in case of severe bleeding, while, in other cases of bleeding the follicular and secretory phases are present and the endometrium appears normal. Vascular phenomena and muscular insufficiency are always considerations in the etiology of functional bleeding. A quantitative imbalance between the ovarian hormones and the pituitary gland response has yet to be settled.

I have consoled many a mother, who has brought her adolescent daughter to me because of irregular menses and bleeding. I do a complete physical examination with the necessary laboratory aids preceded by a very thorough and detailed history of the case. If I find in my examination no constitutional disorders, a normal pelvic examination, a blood count showing no serious blood loss, I can then make a reasonable promise to the mother that her daughter will probably make a normal adjustment, and can reassure the little girl. However, blood counts should be taken at short intervals to determine the blood loss. Inasmuch as the bleeding is in most instances anovulatory, as soon as ovulation establishes itself, menstrual regularity in rhythm and amount takes place.

It must not be forgotten that menstrual irregularities as to rhythm and amount are not uncommon during the adolescent period and that conservatism and a "hands off" policy is the treatment of choice. Blood loss will determine active treatment. However, some observers feel that in the failure of ovulation, treatment by the gonadotropic substance should be started at once.

There are several types of endocrine treatment for us to consider in functional bleeding during the adolescent period:

1. *The gonadotropic substances* are certainly indicated, because they initiate ovulation. I have already mentioned the gonadotropic substances

as to method of treatment, and there are no changes in this instance. I can confirm by an extensive experience that these substances are useful.

2. *Progesterone preparations* in 1 to 5 rabbit unit doses give variable results, but should be tried. It has been shown that as high as 100 units may be necessary to luteinize a proliferative endometrium; on the other hand, it is known, in spite of the above statement, that splendid results may be obtained with much smaller doses.

3. *The anterior pituitary-like substances* are not recommended because of follicular atresia. I am well aware of the fact that it does lessen bleeding in some instances. However, it is not by ovarian luteinization and progesterone effect that the chorionic hormone preparations work. The daily dose as usually given is anywhere up to 500 units or even higher during the bleeding period. Perhaps the bleeding is stopped by partial castration.

4. *Testosterone* in the form of the propionate is becoming a popular treatment and has produced results. It has characteristics similar to progesterone in that it may have an inhibitory effect upon the proliferate activity of the endometrium, normally characterizing the follicular phase of the cycle. It is usually given in 10 to 25 mg. doses twice a week. Hirsutism and masculinization of the patient by this preparation should make one cautious during the treatment.

Curettage of the uterus may be imperative in some cases to stop blood loss and may tide the case over a considerable period of time until other treatments may become effective.

Radiotherapy may be a treatment in desperation and is certainly radical. On the other hand, every available agent may be exhausted in the control of serious bleeding.

Rest, a high caloric nourishing diet rich in vitamins, and the elimination of all constitutional factors are of prime importance.

It must be remembered that these little girls sometimes develop an emotional and psychic upset, which should be eradicated and the patient reassured and restored to a happy mental state.

Primary Dysmenorrhea. Primary dysmenorrhea is a very important functional disorder of the adolescent period. It has been pointed out that the great majority of dysmenorrhea cases do not begin at the time of puberty but often a considerable time later. One observer points out that it is a disease of the ovulating girl and does not occur as frequently in the girl with the anovulatory type of cycle; one rarely observes dysmenorrhea in the functional bleeding of the adolescent girl; an imbalance between the two hormones seems much more important than a domination of estrogen alone; and in the same way one rarely finds the complaint of pain in the menopausal bleeder.

Primary dysmenorrhea may have various other causes and a detailed history and thorough physical examination with the necessary laboratory aids are indicated. An examination under anesthesia of the pelvic organs may be indicated.

Developmental defects should be detected; constitutional factors should be eliminated; and psychogenic phases should be observed.

In the treatment of dysmenorrhea, rest, hygiene, constitutional factors and diet should be given no little importance, and developmental defects should be corrected.

The use of progesterone as on endocrine treatment is indicated in that the estrogenic substance stimulates muscle contraction and initiates spasm, while progesterone inhibits muscle contraction and is anti-spasmodic. The progesterone is given in daily doses a few days or a week preceding the menstrual period and must be individualized as to dosage.

Testosterone propionate has been used in the treatment of this complication based upon depressing estrogenic effect through the anterior pituitary. Evidence seems to indicate it inhibits follicle ripening. A dose of 10 mg. is given intramuscularly twice or three times a week throughout the cycle.

The pregnancy urine preparations or the anterior-pituitary-like substances have been used for a week preceding the onset of the period. Once again, I condemn the use of these substances, because they produce follicular atresia.

Thyroid gland extracts in small doses and properly controlled have been effective in this complication.

A careful dilatation of the cervix may produce beneficial results in some instances.

Another distressing disturbance during adolescence is hirsutism which may date to puberty or adolescence. The investigation as to its cause should be directed toward determining whether

the adrenals or the pituitary gland is at fault and treatment carried out accordingly.

SUMMARY

1. A thorough history, a complete physical examination, and extended laboratory aids are necessary in diagnosing and treating the menstrual dysfunctions of adolescence.

2. Menstrual irregularities in the adolescent period are manifestly associated with and related to conditions arising in both the pre-pubertal and pubertal periods.

3. Primary amenorrhea in a healthy girl with good pre-pubertal development may delay active treatment. However, primary amenorrhea with faulty pre-pubertal development may finally indicate active treatment. Age may be a determining factor.

4. Functional bleeding during the adolescent period usually corrects itself and only excessive blood loss should indicate active treatment. There is usually a failure of ovulation. The gonadotropic substances are certainly indicated as a method of treatment in this complication because they initiate ovulation, and there are those who feel that treatment should be started immediately.

5. Dysmenorrhea may be treated from the endocrine standpoint, but other factors must not be overlooked.

6. The thyroid gland extracts should not be forgotten in menstrual irregularities, even though the treatment may be empirical. This statement holds true in amenorrhea, functional bleeding and dysmenorrhea. The thyroid dosage should be guarded and controlled in part by basal metabolic rate determinations.

7. The anterior pituitary-like substances should be used with distinct caution because of their tendency to produce follicular atresia.

8. Caution should be exercised in the use of testosterone propionate because of the tendency to hirsutism and masculinization.

4133 Manitou Way

DISCUSSION

Dr. Edward Allen, Chicago: I would like to express my appreciation to the Section on Pediatrics for this opportunity to discuss Dr. Campbell's excellent paper.

I have been interested for some time in these problems of the adolescent girl because I have felt, as the Chairman just expressed it, that the period between pediatric care and when the gynecologist receives the patient, has been a badly neglected one. I quite agree with the Chairman that it would be wise for the pediatrician to extend his care upward and the gynecologist downward so that this may become a cooperative effort.

There is much to be learned concerning the problems encountered in the adolescent youngster. These problems have in the past been somewhat neglected due largely, I think, to both lay and medical prejudices concerning the problems of the adolescent girl. We see no more reason why complete examinations of the little girl's pelvis should not be done than of her old sister. It is high time that we rid ourselves of the sanctity of the intact hymen in matters of health. Adequate examination can be conducted in the vast majority of cases by recto-abdominal examination combined with visualization through a virginal speculum or vaginoscope. If anatomic conditions make this impossible we feel that they may interfere with an adequate drainage and discharge of menstrual blood and in later life proper sexual relations. They should be corrected.

Probably due to the fact that we have not had the opportunity of close clinical contact with endocrinologists of note as Dr. Campbell has, our results of hormone therapy have not been satisfactory as Dr. Campbell reports. We believe that many of these conditions, such as Dr. Campbell mentions, of amenorrhea, dysmenorrhea, and even some of the functional bleedings, might be avoided by proper early examination and therapy. The most satisfactory procedures in the treatment of these conditions have been the time honored ones of proper hygiene, rest, and reduction or increase in body weight, vitamins and adequate minerals. Thyroid therapy we feel should not be denied a patient on the basis of a normal metabolic rate or even a slightly elevated metabolic rate. Many of our cases of functional bleeding have responded only when the margin of over-dosage with thyroid has been reached.

We have not had the results that Dr. Campbell reports with the endocrine substances that promote ovulation in the human female.

We are heartily in accord with him in regard to the ineffectiveness of the pituitary-like substance obtained from pregnancy urine. In view of the recent reports concerning the transitory effect and the disagreeable sidechain effects of the male sex hormones in young individuals we would add our admonition to that of Dr. Campbell that it be used with great care.

Crowded living conditions, mounting prices of necessities, increased mental, emotional and physical strain — inevitable by-products of industrial defense activities — are factors dangerously favorable to the increase and spread of tuberculosis. Kendall Emerson, M.D.

CANCER AND PRECANCEROUS LESIONS OF THE LIP

FRANK E. SIMPSON, A.B., M.D.
CHICAGO

The lip presents two surfaces, the internal surface being mucous, the external, cutaneous, with a free red border between — the vermillion part of the lip.

The vermillion part varies in width from a few mm. to one or more cm. being widest in the central part of the lip. Externally, the vermillion part is well demarcated from the skin — internally, its definition from the true mucous surface is less sharp.

Cancer of the Lip. Cancer is the most important of the complex pathologic processes affecting the lip.

Etiology. The cancerous process consists essentially of an "uncontrolled multiplication" of epithelial cells which break through the basement membrane and invade the deeper tissues. Once started, cancer untreated continues in the living body indefinitely even after the exciting agent is removed. The nature of the exciting agent may be different in different cancers.

Animal experiments indicate that the cause of the "uncontrolled multiplication" of epithelial cells characteristic of cancer lies in the occurrence of some subtle, permanent change in the cell itself. The exact nature of this cellular change still remains a secret.[1]

In discussing the etiology of cancer of the lip the following factors may be considered: —

Age. Labial cancer occurs most frequently between the ages of 50 and 70, but also in those much older or younger.

Sex. Over 90% of cases occur in males.

Heredity. Believed by some to be of great importance, Broders[2] found in a study of 537 cases that the influence of heredity was negligible.

Precancerous lesions. This term has been criticized but is nevertheless useful to indicate certain well-defined lesions which may but do not necessarily terminate in cancer.

Boyd[3] says "Great uncertainties and differences of opinion prevail regarding the relation of these lesions to tumor formation. A precancerous lesion is one which precedes the development of malignant disease, usually carcinoma, occasionally sarcoma."

The chief precancerous lesions of the lip are:

1. *Benign Tumors.* (a) Melanoma (Figure 1) On the vermillion part of the lower lip, a black spot may appear, which is at first barely visible to the naked eye. The black spot, contrasting sharply with the red of the lip, may be punctate, linear, round, oval or irregular, the surface being smooth and covered with unbroken mucous membrane. For a long time, the lesion is not palpable. It gradually enlarges by thickening or more often by peripheral extension. Several years may elapse before the black spot is a centimeter in diameter. Appearing in persons 35 or 40 and even in those who are younger, the lesion, at first apparently benign, may terminate in melanotic cancer ("malignant lentigo").

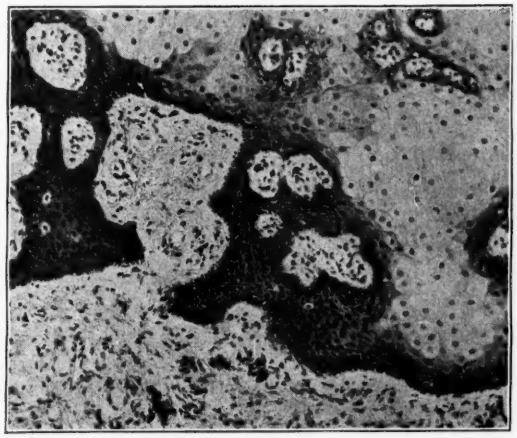

Fig. 1. Photomicrograph of section of smooth black lesion 1 cm. in diameter in center of vermillion part of lower lip. Female, aged 39.
Pigment cells which appear to be melanophores underneath epithelium and in papillae.
Granulation tissue underneath epithelium.
Inflammatory acanthosis. Probably precancerous.
Microscopic diagnosis: Dr. E. R. Strauser.
Excision 12-13-38: Dr. R. W. McNealy.

In the last few years, we have seen three cases of this disease affecting the lower lip which were successfully treated by early excision.

Other sites may be affected. A similar black spot, at first apparently benign, may develop under the nail in the nail bed or in the paronychial tissue, the thumb and great toe being favorite sites ("malignant whitlow").

The pathogenesis of melanoma has been discussed in a previous paper.[4]

(b) Pigmented nevus.

(c) Papilloma — a wart-like growth.

2. *Cysts* — sebaceous.

3. *Hypertrophies.*

(a) Keratosis — a yellowish crust or horn-like excrescence.

(b) Leukoplakia — pearly white, flat or slightly elevated spots or patches — often called "smoker's patches," although not always due to tobacco.

(c) Erythroplakia (Erythroplasia) — a red, shiny, velvety plaque.[5]

4. *Atrophies* — physiologic involution — "old age" of the skin; lesions of xeroderma pigmentosum or lupus erythematosus.

5. *Chronic inflammation* — Characterized by varying degrees of scaling, excoriations, cracks, ulcerations, crusts, fibrosis and "soreness."

To Billroth's dictum — "without previous chronic inflammation cancer does not exist" — there are of course some exceptions.

Chronic inflammation may be *simple, specific* or *idiopathic.*

Simple chronic inflammation. Predisposing causes include — nutritional disorders — Avitaminosis A or B; Roentgen xerostoma — dry mouth.

Exciting causes are usually local, chronic irritants to which the lower lip especially is exposed.

If the action of an irritant lasts long enough, cancer may develop, the usual sequence of events being (a) chronic irritation lasting months or years (b) a precancerous lesion (c) cancer.

Irritants acting singly or in combination may be:

(a) Mechanical — pressure of a tobacco pipe-stem or a rough tooth, biting the lips, holding nails, pins or tarred needles between the lips as practised in some occupations.

(b) Chemical — tobacco, cigarette paper, tarred needles, lip-sticks or other cosmetics, saliva.

(c) Thermal — tobacco-pipe, burns from hot food, drink, cigarettes, molten iron in foundries, exposure to sun, hot or cold winds.

(d) Actinic — excessive irradiation (*x*-rays or radium), exposure to sun.

(e) Biologic — pyogenic or other micro-organisms.

Specific chronic inflammations — syphilis (gumma) and tuberculosis of the lip — may rarely terminate in cancer.

Idiopathic chronic inflammation, as in lupus erythematosus, may rarely terminate in cancer.

6. Scars — the result of injury or disease.

PATHOLOGY

UPPER LIP. Cancer affecting the cutaneous surface of the upper lip is usually basal-celled; involving the muco-cutaneous junction or mucous membrane, squamous-celled.

LOWER LIP. Cancer of the lower lip is usually squamous celled. Due probably to lymph or blood stream transference of cancer cells rather than to contact, squamous celled cancer of one lip (usually the upper) may very rarely be followed by cancer of the other lip.

Rarely adenocarcinoma may arise in the body of either lip.

In 1920, Broders[2] divided squamous celled cancer of the lip into 4 grades of malignancy depending on the degree of cell differentiation and mitosis, special stress being laid on the former. In a study of 537 cases, about 78% were of grades 1 & 2; these were of relatively low malignancy. Grade 3 constituted about 21% and grade 4 about 1% of the cases; these were of high malignancy. Since the publication of his original paper, Broders has slightly modified his method of grading.[2]

CLINICAL FEATURES

Site. In 98% of the cases, cancer occurs on the lower lip. It begins most frequently at the muco-cutaneous junction; more rarely on the mucous or cutaneous surface.

Signs. Cancer may start (1) de novo in previously normal tissue[6] (2) in a precancerous lesion.

1. Origin de novo. Some believe cancer never starts in sound tissue.[7] It is of course impossible to exclude the existence of a minute precancerous lesion.

2. Origin in precancerous lesions. It is impossible to determine clinically or microscopically the exact moment when cancer begins. If a precancerous lesion rather suddenly shows changes in its physical character — increased pigmentation, growth, increased scaling, excoriations, a crack or an ulceration, bleeding, lumpiness or induration — cancer may be starting.

Sometimes the first definite clinical sign of cancer is the appearance of one or more pearly white papules — epithelial "cell nests" — which are in the beginning barely visible to the naked eye.

If "seborrheic inflammation" of the lip exists, cancer cells may develop and infiltrate the lip widely without causing a definite induration.

Usually cancer cells as they multiply form a lump several millimeters in diameter and hard to the touch. The lump breaks down centrally and a superficial or deep crack or ulcer develops which discharges serum, pus or blood.

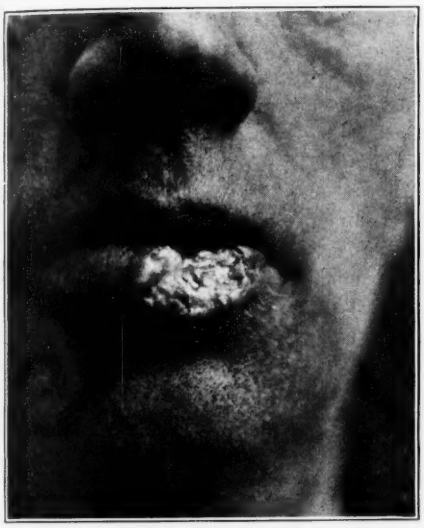

Fig. 2. Squamous celled epithelioma of lower lip.

The size of the ulcer varies from a few mm. to one or more cm., the shape being linear, round, oval or irregular. The surface is uneven and may be concealed by crusts.

As the lesion slowly progresses, it assumes like cancer elsewhere an everting or inverting form, the former sometimes being wart-like, the latter deeply infiltrated with a raised, irregular, sometimes polycyclic border. The border and base are hard to the touch.

The two forms may coexist in the same lesion. Cancer may destroy the lip, the soft tissues of the chin and adjacent areas and finally affect the mandible.

Symptoms. Early cancer causes little or no pain although a precancerous or cancerous "sore spot" due to an excoriation or a crack may have existed on the lip for many months.

We have seen cancer of the lip many centimeters in extent which the patient insisted caused no pain.

Course. The course of cancer is chronic; untreated cases live from one to three or more years. Death is usually due to metastasis, hemorrhage, septic infection, edema of the glottis or pneumonia.

METASTASIS

Squamous-celled cancer of the lip may spread, usually by lymphatic embolism, to the adjacent lymph nodes of the neck; much more rarely to distant organs by the blood stream.

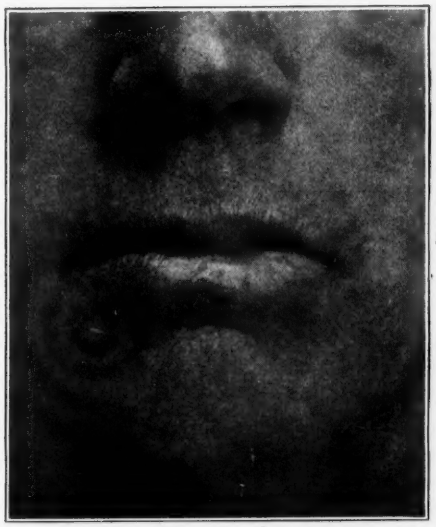

Fig. 3. Treated with surface applications of radon; clinically well over 3 years.

Squamous-celled cancer of the upper lip usually metastasizes early to the submaxillary or upper deep cervical nodes of one or both sides of the neck.

If the lateral part of the lower lip is involved, the submaxillary lymph nodes are usually affected; if the central part of the lip is involved, the submental nodes. The deep cervical nodes are involved later. Sometimes the nodes on the side opposite to the lesion are involved first. Grade 1 seldom if ever metastasizes. In grade 2 metastasis may be delayed for a year or more. Grades 3 and 4 usually metastasize early.

Basal-celled cancer seldom metastasizes; adenocarcinoma metastasizes late.

DIAGNOSIS

A black spot, a wart-like growth, a yellowish crust or horn-like excrescence, a pearly white, circumscribed spot of leukoplakia, a red, shiny, circumscribed plaque, an excoriation, a crack or a

"sore spot" on the lower lip lasting more than a few weeks may be regarded as precancerous particularly if occurring in persons past 40.

Inspection of the lesion may be sufficient for diagnosis. Palpation should be gentle. Squeezing a lesion to test its consistency is contraindicated.

MICROSCOPIC EXAMINATION

Biopsy and microscopic examination are necessary for a positive diagnosis of cancer. Differences of opinion exist as to the advisability of biopsy in lesions that are precancerous or in a very early cancerous stage.

Some demand biopsy in practically all lesions of these types — others believe precancerous or very early cancerous lesions may be treated without subjecting the patient to exacting scientific investigation. We believe that, as a rule, clinical diagnosis of very small lesions by the surgeon or dermatologist is sufficient. Minute lesions, if biopsy is deemed advisable, should be widely excised rather than subjected to partial excision as in the ordinary biopsy.

Anesthesia for biopsy may be obtained by the application of "cocaine mud" or nerve block. Infiltration of novocaine solution into the lesion is contraindicated.

A wedge of tissue 2 mm. in diameter may be taken from the edge of the lesion. A sharp knife is preferable to scissors or a cutting forceps for biopsy. A little bleeding to wash out loose tumor cells is desirable. A biopsy wound should not be cauterized or stitched up.

DIAGNOSIS OF OTHER LESIONS

Syphilis. In gumma, the most important lesion resembling cancer, the Wassermann reaction is usually positive and antisyphilitic treatment given as a diagnostic test will cause rapid healing in from 1 to 3 weeks.

Blastomycosis. We have recorded one case affecting the lower lip and chin, which was healed by radium.[4]

Other diseases, well known to the dermatologist, include: — 1. tumors — sarcoma, xeroderma pigmentosum, angioma, lymphangioma, keloid, 2. cyst-like lesions — milia, Fordyce's disease, implantation cysts, 3. inflammations — "eczema", herpes febrilis, "boils", sycosis vulgaris, perléche, cheilitis exfoliativa, cheilitis glandularis, lichen planus, lupus erythematosus, tuberculosis, syphilis (chancre, mucous patches), rhinoscleroma (upper lip).

For the diagnosis of these diseases the reader is referred to dermatologic treatises.

TREATMENT OF PRECANCEROUS LESIONS

Obvious chronic irritants should be removed. Treatment should be adapted to the nature of the lesion.

1. Melanoma. Early excision is advisable. Radium is contraindicated.

2. Wart-like growths, keratoses and erythroplasia may be treated with radium.

The technic is similar to that used for cancer but the dosage is less varying with the nature of the lesion.

3. Leukoplakia may disappear spontaneously if tobacco is stopped. Treatment may not be needed but periodic examination is advisable. Neoplastic leukoplakia may sometimes be treated with a ¼ strength radium plaque, screened with 1/10 mm. of lead. Three treatments of 5 minutes each may be given on successive or alternate days. If leukoplakia shows marked thickening, exfoliation, cracking or bleeding, cancer may be imminent and biopsy should be performed. If cancer is found, excision or radium treatment is indicated.

4. Excoriations, cracks or a "sore spot" should seldom if ever be cauterized, as cancer, if present, may be stimulated. Lesions of these types especially cracks occurring at the angles of the mouth may be due to lack of vitamin B.

The administration of vitamin B complex may result in recovery.

5. Hypertrophic scars or keloids may be leveled with radium. The technic of treatment has been given in a previous paper.[4]

TREATMENT OF CANCER

Surgery and radium "should be considered as complementary rather than competitive in the treatment of malignant tumors."

Surgery.

1. Squamous-celled cancer. Grades 1 & 2 may be treated by surgery or radium; grades 3 & 4, by radium. Large and deeply infiltrated lesions may be treated by surgery combined with conservative pre and post operative surface applications of radium.

2. Basal-celled cancer. Surgery is seldom indicated.

3. *Adenocarcinoma should be excised. Cancer developing in scar tissue should also be excised.*

Surgical results from wide excision of cancer *of the lip are good, approximately 70% of cases* remaining well for a 5 year period.

Radium. James Ewing says:[3] *"Although surgical results with labial cancer are excellent, radium accomplishes as much or more without* mutilation. Any one who understands human nature cannot doubt that many more people will submit to radium therapy than to the knife and do it earlier. The treatment of many more suspicious or precancerous lesions will also be accomplished by the simple methods of radiation."

Fig. 4. Squamous celled epithelioma of lower lip.

Squamous-celled or basal-celled cancer of the lip not over 2 or 3 cm. in diameter may usually be healed by radium. Even larger lesions may respond well. Everting lesions are more easily healed than inverting types.

In inoperable lesions, radium may give palliation and occasionally a case may be cured.[4]

Lesions that persist after numerous operations, prolonged and unsuccessful irradiation, application of cancer "pastes" or other destructive treatments may do badly. If the tumor bed has been previously injured there may be a lack of vital reaction on the part of the tissues necessary for the best effects of radium.

Chronic alcoholism, syphilis and diabetes are *unfavorable factors in the radium treatment of* cancer.

Radium Technic. Two methods have been *advocated (1) surface irradiation (2) radium* "puncture." We mention the latter method only *to condemn it. Radium "puncture" of the lip* is traumatic and entails a good deal of pain and destruction of tissue. The cosmetic results are poor. If recurrence takes place further irradiation is rendered difficult and may be ineffective. The manipulation of the lip may easily cause metastasis. Although used by some authors, we believe radium "puncture" of the lip is contraindicated.

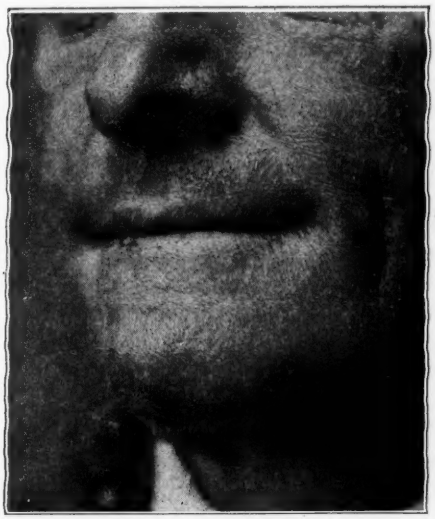

Fig. 5. Treated with surface applications of radon; clinically well over 14 years.

Surface Irradiation. Our technic consists usually in the irradiation of the external, internal and superior aspects of the lip.

The technic depends on the configuration of the lesion, being essentially the same for the upper and lower lip. The external aspect is usually irradiated first; the internal, next; the superior, last.

Assume a lesion of the lower lip is to be treated.

With the patient lying on a table behind a heavy lead angle plate, a thin roll of cotton is very gently tucked between the inner surface of the lip and the gum so as to bring the lesion out and away from the gum. Great care must be taken not to crack or traumatize the lesion.

A rubber finger cot, stuffed with cotton, is placed parallel with the lips between the teeth. Pieces of gold, 4 mm. thick, may also be used to aid in protecting the gums, upper lip and point of the chin.

We have long since abandoned all sorts of moulages for holding the radon tubes against the lesion.

The construction of moulages involves unnecessary traumatism to the lesion and may be a cause of metastasis. We use a rubber or balsa wood block which is gently laid on the lesion and held in place by adhesive tape. The block may be from 0.5 to 1 or more centimeters thick in order to give the required distance of the radon from the lesion.

An applicator containing from 250 to 500 mc. of radon screened with 2 mm. of silver may be laid on the block. The greater the distance of the radiating source from the surface of the lesion, the larger should be the quantity of radon.

Superficial Lesions. Assume area of plane of longest diameter of tumor to be 4 sq. centimeters.

The radon tubes being 0.7 centimeters distant from the lesion (silver screen = 0.2 cm. plus balsa wood block = 0.5 cm.) a total of approximately 60 to 65 millicurie hours per square centimeter of irradiated surface may be given in seances of from 10 to 15 minutes each.

Deep Lesions. Assume area of plane of longgest diameter of tumor to be 6 sq. centimeters. At 1.2 centimeters distance (silver screen = 0.2 cm. plus balsa wood block = 1 cm.) a total of approximately 250 millicurie hours per square centimeter of irradiated surface may be given in seances of from 15 to 20 minutes each.

Treatments may be given daily or on alternate days as office procedures.

It is important to irradiate several cm. beyond the tumor edge but care should be taken that the irradiations do not overlap.

No sterotyped method of using radium can be devised, however, to cover all contingencies and types of lesions. There is no such thing as a "cancer dose." One should always give the "toleration dose" i.e. the dose one believes the normal tissue will tolerate without serious impairment of its integrity.

Lymph Nodes of the Neck. The surgical and radiological treatment of the lymph nodes adjacent to labial cancer, a subject fully as important as the treatment of the labial lesion, has been discussed in a previous paper.[9]

RADIUM STATISTICS (1941)

	Number of cases
Number of consecutive cases of cancer of lip treated (1926-1938)	114
Cases with metastases in neck when first seen	10
Recurrence in lip and development of metastases	2
Recurrence in lip and later successfully excised	1
Clinical recovery under radium (3 to 15 years)	101 (88.5%)

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NEPHRITIS IN CHILDREN

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TYPES OF NEPHRITIS most commonly seen in children are: 1. Acute glomerular (hemorrhagic) nephritis. 2. Lipoid Nephrosis.

Acute Glomerulo-Nephritis.

Etiology: Toxic effect on the glomeruli of hemolytic streptococcus infections especially tonsillitis, otitis, cervical adenitis, nasal sinusitis and scarlet fever.

Pathology: Inflammatory changes in the glomeruli with proliferation of the endothelial cells resulting in a diminished blood flow thru the glomeruli.

Symptoms: Acute onset several days to weeks after beginning recovery from antecedent infection (latent period) — may vary from slight malaise to stormy with convulsions and anuria. Following scarlet fever acute nephritis occurs late in convalescence (18 to 21 days after eruption). Onset frequently coincides with a re-

From the Sarah Morris Children's Hospital of Michael Reese Hospital Chicago. Read before the Post-graduate Conference of the Illinois State Medical Society at Decatur, Oct. 8, 1940.

newed activity of the strep. in throat, cervical glands, sinuses etc. Occasionally occurs without any evidence of a septic focus.

Urinary syndrome always present — in mild forms may be present alone — albuminuria, hematuria (may cause urine to look smoky) — occasional casts and leucocytes. Oliguria or even anuria may be present especially early.

Edema is usually not marked — puffiness about the face and eyes — some swelling of the ankles.

Non-Protein Nitrogen Retention is usually present during the early stage of diminished urinary output. — Blood urea increased in varying degrees.

Hypertension usually present — exists if blood pressure is over 110/70 in children.

Pain and Fever — little if any caused by the nephritis itself.

Course and Prognosis

Most clear up in 2 to 3 months or less. — Urinary picture is last to clear.

Amount of early hematuria, albuminuria, edema, non-protein nitrogen retention or hypertension has no effect on ultimate prognosis.

Immediate prognosis worse if complications develop — these have no effect on ultimate prognosis.

Guarded prognosis and danger of chronicity if

1. No history of recent acute infection.
2. Considerable edema persists for longer than two weeks.
3. Functional impairment persisting longer than four months especially low urea clearance and low specific gravity in concentration test. If these are normal within 4 months, even though some albuminuria and microscopic hematuria persist — outlook is good.
4. Considerable anemia or malnutrition.

Complications

Hypertensive encephalopathy or cerebral symptoms.

Due to edema of brain or vascular spasm of blood vessels of brain —

Occurs usually during first few days of acute nephritis and is *immediately dangerous to life. Fairly* common in children.

Symptoms: Acute onset. *Rapidly rising blood pressure* is of great significance. Epigastric pain — nausea and vomiting. Headache. Visual disturbances such as seeing spots, temporary blindness, etc. Convulsions and coma.

No relation to amount of edema, degree of nitrogen retention in the blood (may occur with an N.P.N. of 40), severity of the hematuria, anuria, amount of proteinuria — no correlation of these to degree of cerebral symptoms.

Acute uremia (renal insufficiency)

Insidious onset — symptoms most pronounced after first week. Anuria or oliguria persisting for a week or longer. *Rising non-protein nitrogen retention to extremely high levels after a week or more.* Uriniferous breath — acidosis. Drowsiness — later coma — convulsions rare except terminal. Not very common in children. *No relation to degree of hypertension, edema, hematuria or albuminuria* — the two former may even be absent.

Cardiac (myocardial) Failure (acute): Not common in children. Related to hypertension and infection. Due to hypertension plus toxicity from original focus.

Symptoms: Tachycardia, palpitation, weak pulse, cardiac enlargement, dyspnea, pallor, pulmonary congestion, liver enlargement and E.K.G. changes often similar to anterior infarction.

Treatment of Acute Glomerulo-Nephritis

1. *Elimination of Infection* and infected foci very important to prevent further renal injury — has no effect on damage to kidney already done.

A. *Sulfanilamide.* Acute nephritis nearly always associated with *hemolytic streptococcus infection.*

Sulfanilamide specific in suppressing such a focus *if original strept infection is still active* — uncertain value if no clinical evidence of acute infectious disease.

No adverse effects on renal function, but when kidney function is diminished, excretion of sulfanilamide impaired to about same degree as urea excretion i.e. if urea retained in abnormal quantities in the blood, the drug will be also. Consequently blood determinations are important every few days under these circumstances. — 6 to 10 mg. per 100 c.c. is proper level.

Alkalies not given with sulfanilamide — because danger of alkalosis — inability of damaged kidney to excrete fixed bases.

Dose: Start with gr. ¾ per lb. ideal body weight per 24 hours. *First 24 hours.* Give ¼ of this initially and again in 4 hours and ⅛ every 4 hours for first 24 hours. *Second 24 hours.* 1/6 every four hours. *Maintenance dose*

determined by blood level. *Administered by mouth* if no vomiting — otherwise subcutaneously. Especially watch blood level if oliguria, anuria or marked nitrogen retention.

B. *Immune Serum.* Human convalescent scarlet fever or streptococcus serum also efficacious in eradicating inciting infection — especially if given intravenously in 40 to 60 c.c. doses.

C. *X-Ray therapy* especially to subacute cervical adenitis and tonsillitis.

D. *Minor Surgical Measures. Tonsils* should not be removed until after recovery. *Suppurative Cervical Adenitis* if fluctuating — incised *Nasal Sinusitis* — shrinkage and suction — occasional antrum puncture. *Suppurative Otitis Media* — drum incised — mastoid operated on when indicated. *Abscessed teeth* if present — not more than one extracted at a sitting. *Always advisable to administer sulfanilamide before and after surgical procedures to avoid temporary exacerbation of nephritis.*

2. *Diet* A. *Low protein* — 1 gm. per kilo of ideal weight per 24 hours until blood urea returns to normal — (usually not longer than a week or two) then normal protein content in diet for the age of the child. Urea clearance impaired by diminished blood flow to glomeruli.

B. *High carbohydrate* — children like it — avoids ketosis.

C. *Low salt* — 2 gm. per day — especially while oliguria and edema persist — kidney not able to eliminate normal quantities of salt — due to decrease in glomerular filtrate — Need not always be so sharply restricted unless rapidly increasing edema or rising levels of serum sodium chloride. Salt is restricted until edema has disappeared and diuresis well established.

3. *Fluids. Cause of Edema.* In acute nephritis, (due to arterial constriction, glomerular exudate, etc.), there is decreased glomerular blood flow resulting in decreased glomerular filtrate, causing kidney to fail to eliminate normal quantities of water and salt (result is edema).

Ideal Treatment: Restoration of normal glomerular blood flow. Diuretics: No known diuretics will increase glomerular blood flow and are contraindicated — *mercurial diuretics* diminish tubular absorption but this factor is not at fault — should not be used.

Fluids: Normal blood volume should be maintained — Prevent dehydration but avoid excessive fluids — better to err on side of too much.

Regulated and governed somewhat according to output. If child excretes in urine ½ or more of intake — amount of intake may be increased gradually up to the normal fluid intake as long as this ratio holds.

If oliguria or anuria with a rising level of non-protein nitrogen persist for more than 5 days after onset of nephritis, push fluids to promote diuresis even in presence of edema. If no diuresis after 5 days, — 500 to 1000 c.c. of weak tea or water (depending on size of child), is given within ½ hr. if possible, early in A. M. — may be repeated daily for a day or two.

If marked hypertension, cerebral manifestations or myocardial weakness, do not force fluids as may aggravate these complications even in absence of edema.

Type of Parenteral Fluids — when vomiting persists use 10 per cent. dextrose — rarely add normal saline unless severe vomiting and dehydration.

Modified Volhard Diet for Children. Only recommended in the early stages of severe acute nephritis especially those accompanied by considerable hypertention. *Only to be continued for 3 or 4 days at the outside after the onset of acute nephritis.*

Pint of bland fluid daily e.g. orangeade, lemonade, sweetened weak tea, sugar water.

Small portions of food three times daily as ½ orange, grapefruit, or baked apple, graham cracker.

Milk and cereal added after 3 or 4 days and as improvement takes place diet is gradually increased in quantity and variety to that consistant with a normal diet for the age.

Karrell diet recommended by some few. (not generally used).

Milk — between a pint (500 c.c.) and quart (1000 c.c.) depending on size of child, given daily divided into four feedings — 1000 c.c. provides 600 to 700 calories, 30 to 35 gm. of protein and 1.8 gm. of sodium chloride.

When diuresis begins — add fruit juices, fruits, cooked vegetables (except corn, peas, lima beans), cereals, puddings, butter, jelly, sugar, honey and cream. Gradually the diet is built up to normal.

4. *General Measures: Bed rest* until ordinary

examination of urine is practically negative — average is 6 weeks — after 2 months may be up if only tr. of alb. and occas. R.B.C. in urine and otherwise normal. *Warmth*: Avoid chilling or exposure to cold — warm bed clothes etc. *Tonics for anemia: Vitamins. Diuretics drugs* are worthless in acute nephritis.

Special Treatment of Complications:

1. *Hypertensive encephalopathy*

A. *Magnesium sulphate — Per mouth* — if conscious and no vomiting — 1 to 2 oz. of saturated solution (50%) every 4 hours until symptoms subside — or rectally if can be retained.

Intramuscularly — when cannot be given by mouth or when rapid action is desired as when blood pressure is rapidly rising or convulsions or coma supervene 0.2 to 0.4 c. c. of 25 per cent. solution per kilo every 3 to 4 hours until symptoms subside.

Intravenously — for emergency — when convulsions, coma and hypertension do not respond to intra-muscular doses — 1 to 2 per cent. solution slowly intravenously until blood pressure drops to normal.

B. *Sulfanilamide if original infection is still active* — incompatible with $MG.SO_4$ and should not be used simultaneously. When convulsions or coma are not present use sulfanilamide first. When convulsions or coma are present use $MG.SO_4$ first.

C. *50 to 100 c.c. of 25 to 50 per cent. glucose intravenously* at times as a dehydrating agent — never saline. Objection to glucose is secondary rise of intracranial tension — Sucrose as a substitute does not have this objection but experiments have shown it to be injurious to the kidneys — Sorbitol (another sugar) overcomes both the above objections.

D. Barbiturates occasionally necessary to control convulsions.

2. *Acute Uremia* — (persistant oliguria, anuria and rising N.P.N.) Push fluids especially 10 per cent. glucose intravenously to encourage diuresis. *Sweating* — (Heat cradle) Only when other measures have failed — caution because of debilitating effect on children — mild catharsis.

3. *Cardiac Complications*

Same as for hypertensive encephalopathy — 50 per cent glucose intravenously — magnes. sulph. — Fluids restricted. Rapid digitalization. Morphine for rest — oxygen for cyanosis.

Lipoid Nephrosis: Etiology Unknown. Febrile complications frequently associated with pneumococcus infections, and 95 per cent have pneumococci in throat flora.

Much more common in pure form in children than adults.

Pathology. Degenerative changes in tubules —

Symptoms: Insidious onset with:

Edema marked — general anasarca with ascites — edema fluid very low in protein content.

Urine during edema. Oliguria, high specific gravity 1.040, chlorides low, *Albuminuria* marked — 1 to 2 per cent. — principal cause of low blood proteins. *No Hematuria.*

Blood: Normal non-protein nitrogen (urea, etc.) — no retention. *Blood serum proteins diminished* from 7 per cent. to about 2 per cent. or less especially serum albumin with reversal of albumin globulin ration of 2 to 1. *Cholesterol* and other lipoids increased from 150 mg. to 500 or more per 100 c.c.

Blood pressure normal. *Renal Function* normal.

Complications: Intercurrent pneumococcic infections especially peritonitis, pneumonia — also erysipeloid skin lesions.

Course and Prognosis: Chronic with recessions — loss of edema, etc., and exacerbations with much edema, fever, etc. (nephrotic crises).

About 50 per cent. eventually recover completely, remainder die of intercurrent infections especially pneumonia and peritonitis.

Treatment. No specific treatment.

Edema is oustanding difficulty, *has a tendency to disappear or reappear even when no treatment is given* — principal cause is decrease in osmotic pressure of blood plasma. Result of hypoproteinemia especially the small moleculed plasma albumin. These conditions favor rapid passage of water and diffusible ions from vascular system to extracellular spaces and retard transfer back to vascular system. Because of this extrarenal diversion into the tissues, less salt and water are excreted by the kidneys. Tubules reabsorb too much salt and water which is again lost to the tissue spaces.

Critical edema level for children is 1.2 gm of plasma albumin per 100 cc.

Daily weights and measured *24 hour urines* to follow effect of therapy.

1. *To Raise Blood Proteins* correct hypoproteinemia or at least raise colloid osmotic pressure of the blood.

A. *High Protein Diet*: Optimal diet in protein content for ideal nitrogen assimilation. 3.6 gm. per kilogram of ideal body weight per 24 hr. — child 1½ to 3 years of age. 3.2 gm. per kilogram of ideal body weight per 24 hr. — 3 to 6 years. 2.0 gm. per kilogram of ideal body weight per 24 hrs. — 12 years old. Months required before much progress is made.

B. *Blood Transfusions* (especially when *Lyophile Serum* (Concentrated blood serum). Effect is often transient, as result in temporary increase in protein loss in urine. *Repeated* intravenous *injections of blood serum,* concentrated or otherwise, however, is frequently followed by diuresis and *should be tried.*

C. *Acacia* — 6 per cent. solution intravenously — Adult dose — not over 500 c.c. in one day — should take an hour to give — repeat on successive days or alternate days until 90 to 120 gm. given. Use begun 3 days after commencing administration of pot. nitrate. Advocated by some and denounced by others. Some element of danger and reaction such as urticaria, chest pain, dyspnea, fever etc. May depress rate of formation of serum protein, or damage liver.

D. Amino Acid solution intravenously — not excreted in urine, utilized by body, improves nitrogen balance — still in experimental stage.

II. *Restrict Salt* — especially sodium ion. Practical restriction of sodium chloride to 1 to 1.5 gm. — salt free butter and bread, no added salt in cooking or salty foods — selection of foodstuffs containing minimal amts. of sodium chloride (limitation of the amount of milk is very important.

May substitute Potassium chloride, 2 to 4 gm. daily in and on the food.

Extra vitamins are valuable to round out diet.

III. *Diuretics*: Only of value when plasma albumin is above critical edema level for children of 1.2 gm. plasma albumin per 100 c.c.

A. Acid-Producing Salts as Potassium nitrate (3 gm. t. i. d. with or after meals for adult and graduated down proportionately for children.), ammonium chloride (1 to 2 gm. daily). Potassium chloride (2 to 4 gm. daily) or calcium chloride.

B. *Mercurial diuretics* such as Salyrgan, Mercuro-purin, etc. intramuscularly, intravenously or rectally — probably do no harm although act on tubular cells which are already injured — better results if follow after a week or more of acid producing salts, no spectacular results as in cardiac edema.

C. *Urea,* probable best diuretic in nephrosis — large doses necessary i.e. for 5 year old child, 40 to 60 gm. daily (15 gm. q.i.d.) in lemon juice, grapefruit juice or grape juice — May be given daily for as long as 6 weeks. *Stopped if blood urea rises* over 20 mg. per cent.

D. *Purine derivatives* (Diuretin, etc.) not much value in nephrosis.

E. *Thyroid in large doses* from gr.i to v t.i.d. occasionally causes diuresis.

IV. *Fluid Restriction not* necessary but they should not be forced — given ad. lib. Some, however, advise restricting to 800 c.c. in 24 hrs. including soup, milk etc.

V. Paracentesis when ascites or hydrothorax impairs vital functions (respiration, etc.) or when massive accumulation of fluid within these cavities. Unless strict asepsis, great danger of infection.

VI. *Rest in Bed* until edema has practically disappeared.

Treatment of Complications: Streptococcus erysipeloid skin lesions. Human convalescent scarlet fever serum. Sulfanilamide. *Pneumococcus Infections,* peritonitis or pneumonia. Specific immune rabbit serum. Sulfathiazol. Sulfapyridine may be dangerous because in concentrated urine may precipitate in renal tubules with resulting anuria.

THE IMPORTANCE OF GROWTH ARREST LINES IN RADIOLOGICAL DIAGNOSIS AND PROGNOSIS*

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Transverse lines are observed in only a small proportion of x-rays of long bones, but their occurrence may be of intense interest from a diagnostic or prognostic standpoint. The average radiologist may see only a few instances in a year, but the signs are there to be read, and familiarity with them may lead to a correct diagnosis or very helpful suggestions to a clinician not aware of the possibilities. Figure 1.

Lines occur in almost all bones, but their appearance in long bones is of more practical sig-

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**Many of the lantern slides illustrating this paper were of cases studied while at the University of Chicago Clinics.

nificance. In some instances their presence gives very positive information, while in others they are comparable to clues which do not give complete information, but which lead to interesting speculations. They also very definitely explain a great deal of the physiology of bone growth. Information can be gained from a study of these lines in the same manner that information is gained from a study of concentric lines observed in the cross section of a tree. In such a section, it is possible with a proper degree of knowledge to read much of the life history of the tree — age, drouth years etc., for the story is indelibly

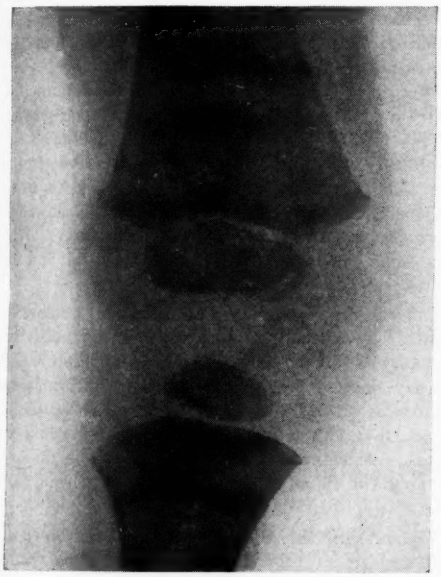

Figure I — X-ray of growing child's knee. Notice the lines in the distal end of the femur and the proximal end of the tibia due to administration of phosphorized cod liver oil. More growth has taken place in the distal end of the femur than in the proximal end of the tibia.

etched there. These lines are not truly analagous but the practical information to be gained from osseous lines is similar.

Abundant experimental and clinical evidence shows conclusively that interstitial growth of bones does not occur. Shaft growth occurs at the end of the bone due to proliferation of the epithyseal cartilage on its shaft side, while growth of the epiphysis itself is due to growth of the articular cartilage and *not* proliferation of the epiphyseal cartilage on its juxta-epiphyseal side. The presence of lines focuses attention on the portion of the bone where growth is localized. It also recalls to mind the fact that trauma, even excessive x-ray dosage, may cause deformity by injury to these growing cells.

Wegner in 1874 called attention to increased trabeculation at the ends of long bones in rachitic children treated with phosphorus. Phemister in 1918 noted that formation of bands in the bones of children during the administration of elemental phosphorus. Since these original contributions, other observations have appeared in the literature. The reason the lines are evident in the radiograph is that on microscopic examination the trabeculae have been found to be far more numerous than normal and, therefore, more closely packed. In the aggregate, they obstruct the x-rays more than the surrounding bone and appear as lines on the film. At times the trabeculae have showed branching and even transverse bridging. While most lines form during the postnatal period, it has been pointed out that administration of bismuth to pregnant luetic women causes lines which are clearly visible in the roentgenograms of newborn infants. A neonatal line which forms comcomitantly with the changing environment at birth has been described as being constant in all deciduous teeth. Occasionally vitamin deficiency in the mother with congenital scurvy in the infant causes transverse shadows in the long bones. Almost any severe illness in a child will leave its radiological mark in the form of a growth arrest line. Scarlet fever is notable in this respect. Their appearance in a roentgenogram immediately postulates an interesting line of thought concerning their etiology.

The appearance of a transverse line is probably best used diagnostically in the corroboration of clinical findings in lead poisoning in children. It is the most constant finding in lead encephalopathy, and in some instances the finding of the line alone has been responsible for the correct diagnosis. Bucy reported an interesting case in which the correct diagnosis was arrived at because of the continued presence of lines three years after the illness. The lead line is practically identical with the lines of phosphorus and bismuth. Since they form as long as the drug is in the system, the depth of the lines gives some idea of the length of time over which ingestion has occurred. Intermittent exposure results in multiple bands.

There are times when it is important to know whether growth has partially or completely

ceased at an epiphysis. The appearance of the epiphyseal line is usually a good guide, but at times it appears open when growth has partially or completely ceased. If a growth line happens to be present it may show partial arrestment of longitudinal growth by angulation of the growth line with the line of the epiphyseal cartilage or failure of the line to move away from the epiphyseal cartilage when compared with its mate. If no growth line is present, and the possibility of growth arrest is suspected, we have a perfectly innocuous drug in phosphorized cod liver oil with which to make a line for future comparison.

Conclusion. In conclusion, it may be said that lines appearing in the roentgenograms of long bones not only reveal much of the physiology of bone growth, but also assist materially in the diagnosis of certain conditions and to some extent foreshadow the future of lesions about the epiphyses.

CLINICO-PATHOLOGICAL CONFERENCE*

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AND
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Dr. Edwin F. Hirsch, Chicago: "The procedure in presenting autopsy material to large groups is unsatisfactory unless the demonstrations can be made so that all simultaneously can see or follow the tissue lesions and clinical data presented. A satisfactory solution of some of these difficulties has been reached at St. Luke's Hospital, Chicago, by the use of projection whereby important details of the clinical course and diagnosis of the patient's illness, the essentials of the anatomic diagnosis of the postmortem examination, the demonstration of gross tissues illustrating the significant lesions, and the details of histologic structure are presented on a large projection screen. The demonstrations of histologic structure are made with a micro projector, all of the others with an opaque object projector. Such a working plan is flexible enough to provide ample opportunity for discussion by those in attendance.

CASE 1

A Negress, aged 71 years, entered St. Luke's Hospital on Mar. 4, 1940 and was discharged on March 7, 1940: death at home on Mar. 23, 1940.

Chief Complaints: The complaints on entrance were eructation, nausea, and vomiting of 40 or 50 years' duration, substernal distress and pain of 35 years' duration, precordial distress and pain radiating down the left arm with epigastrict distress.

History: For the past 40 to 50 years, the patient stated that she had had attacks of nausea and vomiting which occasionally were accompanied by epigastric pains and discomfort. She was under medical care and on a fat-free diet for many years. During the previous 6 weeks, the attacks were more frequent and severe. They usually followed the ingestion of food and were associated with much eructation and precordial, epigastric and substernal pain. These attacks were usually followed by a pain in the left shoulder which radiated down the left arm and subsequent nausea and vomiting.

Physical Findings: The physical examination revealed a well-preserved Negress with a blood pressure of 146/104, a pulse of 84, a temp. of 97.6,° and a respiratory rate of 26. The lung findings were negative. The heart borders were displaced both to the right and left, and there was a blowing apical systolic murmer, and another over the aortic area. There was some tenderness in the left subcostal and epigastric region.

Laboratory Findings: The roentgen findings indicated myocardial pathology and a possible acute coronary occlusion. The Kahn was negative and the urinary findings were not unusual. The erythrocyte count was 4,370,000, the leucocyte count 4,200 and the hemoglobin 11.2 gms.%. The differential count was normal. A sedimentation rate done at this time was 21 mms. in 15 min. and 28 mms. at the end of an hour.

Course: Shortly after entrance, the temp. rose and followed an irregular course between 99 and 100° F. The patient was placed on conservative treatment and received a soft, bland diet, theobromine, luminal and ketochol as the indications arose. The patient felt well and was discharged on March 7. She died on the 23rd, 8 weeks after the onset of her acute illness and 40 years after the onset of her first symptoms.

Anatomic Diagnosis

Organizing infarct of the myocardium of the left ventricle of the heart;

Ulcerated atheroma of the circumflex branch of the left coronary artery;

*Marked constricting calcified sclerosis of the an-*terior branch of the left coronary artery;

Atheromatous and calcified senile sclerosis and fatty changes of the aorta and main systemic *arteries;*

Chronic passive hyperemia of the liver, spleen, *lungs and kidneys;*

Senile nephrosclerosis of the kidneys, etc.

The heart weighed 500 grams. A recent subepi-

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*From the Departments of Pathology and Medicine, St. Lukes Hospital.

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cardial hemorrhage extended along the first portion of the anterior descending branch of the left coronary artery. The pulmonic and triscuspid leaflets had no significant changes. The anterior mitral leaflet had fibrous thickenings and the ring behind the posterior leaflet was calcified for a length of 6 cms. The attachments of the aortic leaflets also were calcified. The ostiums of the coronary arteries were patent. In the lateral wall of the left ventricle extending from the apex upward along the septum behind for 5 cms. and reaching out 4.5 cms. was a partially organized infarct and for 2 cms. about this the myocardium was granular and dry. The first 1.5 cms. of the anterior descending branch of the left coronary artery was sclerotic, calcified and the channel was markedly constricted. The proximal portion of the circumflex branch of the left coronary artery had an ulcerated atheroma 6 mms. in diameter, and beyond the vessel was sclerotic and fatty. The right coronary also had marked sclerosis and fatty changes.

The changes in the other viscera were mainly those of chronic passive hyperemia and senility. The gall bladder contained bile with about fifty black concretions. 4 to 6 mms. in diameter.

Dr. Carl A. Johnson: This patient was under my observation from the time of her admittance to the hospital until the time of her death. Her past history was that of chronic gallbladder disease and this diagnosis was confirmed at autopsy. The history of her last illness, the physical and labortaory findings and the course were typical of an acute coronary occlusion. I was impressed by the ability of this 71 year old woman to withstand the severe exertion of competitive tennis to within six months of her death, in view of the extensive cardiovascular changes demonstrated at post mortem. During the summer preceding her death she won a tennis trophy which was one of the many she had won during her long and active life. On the other hand, atherosclerotic vascular changes may lead to symptoms which incapacitate the patient many years before death, as illustrated by the following case report:

Mr. D., a white male, aged 59 at death, entered St. Luke's Hospital on December 28, 1938 and died on *January 3, 1939. His complaints on admittance were:* dyspnea, orthopnea, swelling of the abdomen and ankles, and attacks of precordial pain which radiated down the left arm. The patient had had symptoms of vascular disturbances since 1927. At that time he had symptoms of intermittent claudication. In 1932 he consulted a physician who made a diagnosis of Buerger's Disease. The patient gave up his work in 1934 because of the severity of the symptoms. In 1934, while *in New Orleans, he consulted another physician who* confirmed the diagnosis of Buerger's Disease. A *therapeutic perivertebral nerve block was attempted* but not completed because the patient had a coronary occlusion during the procedure and fainted in the operating room. In 1935 the patient had a mild stroke from which he made a good recovery. In the past few years the patient had had several heart attacks which were thought to be small coronary occlusions. The most recent one occurred shortly before admittance to the hospital. *Examination:* The heart was enlarged mainly to the left and by x-ray occupied 55% of the chest. The heart tones were faint and a gallup rhythm was present. The rate was 100. The blood pressure before the last illness was 164/100 on the right arm and 108/80 on the left. The radial pulse on the left arm could not be palpated. The legs were edematous and for a number of years the pedal vessels could not be palpated. The leg vessels could not be visualized by x-ray of the soft tissues.

Clinical diagnosis: Generalized cardiovascular disease, and acute coronary thrombosis (probably a posterior infarct). *Anatomical diagnosis:* Huge recent hemorrhagic and necrotic infarct of the myocardium of the left ventricle of the heart; acute fibrinous pericarditis; marked dilatation of the left ventricle of the heart; obliterating atheromatous, senile sclerosis and fatty changes of the first part of the left subclavian artery; obliterating atheromatous senile sclerosis, and fatty changes of the coronary arteries of the heart; marked calcified and atherometous senile sclerosis of the aorta, right and left femoral and right subclavian arteries and of their branches.

Discussion of this case: This case is of unusual interest because of the long history of multiple arterial occlusions, and the erroneous diagnosis of Buerger's Disease made by two competent clinicians. Buerger's Disease is rare as compared with occlusive vascular disease from atherosclerosis. For this reason alone a presumptive diagnosis of atherosclerosis can be made with a greater degree of accuracy than of Buerger's Disease. A mistaken diagnosis such as this may cause a patient untold distress as he goes from doctor to doctor seeking relief from the diagnosis instead of seeking relief from his symptoms. With this patient, his diagnosis lead him from doctor to doctor more than his symptoms which could have been taken care of by the general clinician.

These two cases were very similar. Both had generalized atherosclerosis severe enough to lead to ulcerative changes of the coronary artery with occlusion. The first patient was able to lead a long and active life comparatively free from symptoms of occlusive vascular disease until shortly before death. The second patient presented symptoms of occlusive vascular disease

long before his death, which were sufficient to incapacitate him from carrying on his work. In addition, the second patient illustrates the difficulties encountered in making a diagnosis of Buerger's Disease during life without histological sections to confirm the diagnosis. Erroneous diagnosis such as illustrated by this report are common, and it cannot be emphasized too strongly that Buerger's Disease is a rare disease whose diagnosis should not be made on symptoms alone.

CASE 2

An adult white female, aged 42 years, entered St. Luke's Hospital on Mar. 30, 1940: death April 3, 1940.

Chief Complaints: Fatigue and weakness, weight loss, anorexia, visual disturbance, restlessness, marked dyspnea on slight exertion, marked edema, and nocturia.

History: The patient was well until about 7 mos. before entrance when she began to notice restlessness, fatigue, anorexia, and dyspnea on slight exertion. On Mar. 3, 1940, the patient entered the hospital complaining of the loss of 20 lbs. weight, blurring of vision, and occasional severe frontal headaches. The blood pressure was 222/154, the apex of the heart was 16 cms. from the mid-sternal line, and there was a loud apical systolic murmer. The liver was one finger below the costal margin in the mid-clavicular line. There was poor kidney function and repeated urine examinations revealed a low specific gravity of about 1.010, albumen as high as 750 mgms.% and hyaline casts. The erythrocyte count was 3,420,000, the leucocyte count 11,200, and the hemoglobin 10.5 gms.%. The urea N was 35, the total NPN 60, the creatinine 2.2, the cholesterol 240 mgms.% and the total serum protein 6.2 gms.%. The patient was discharged from the hospital on Mar. 17th with only slight improvement in her condition. She re-entered on Mar. 20th with complaints similar to those on the previous entrance.

Physical Examination: Examination on Mar 30th revealed edema extending to the axilla, a clear sensorium, purpuric spots over the lower costal regions, many scratch wounds, cold extremities, a slightly distended abdomen and hemorrhages into the fundus of the eyes. The temp. was 97,° pulse 148, and the respirations 28 per min. The blood pressure was 230/130. The patient had not urinated for 18 hours.

Laboratory: The laboratory findings included an erythrocyte count of 2,850,000, a leucocyte count of 20,100, and a hemoglobin of 8.6 gms.%. The urea N was 225, the total NPN was 260, the creatinine was 8.6 mgms.%, the alkali reserve was 28.9 vols.%, the serum albumin was 4.5, the globulin 1.5, and the total serum protein was 6.0 gms.%. The urine had a specific gravity of 1.013 and there were 750 mgms.% of albumin and a few granular casts.

Course: The patient's condition became progressively worse despite careful attention to diet, fluids and salt balance. The patient was restless, had many spasmodic twitchings of the body, and became comatose shortly before death which occurred on April 3, 1940, 4 days after entering the hospital and about 7 mos. after the appearance of her symptoms.

Anatomic Diagnosis

Primarily contracted kidneys—malignant nephrosclerosis (uremia);

Acute fibrinous (uremic) pericarditis;
Marked hypertrophy of the myocardium;

Dilated chambers of the heart;
Acute catarrhal ileitis, colitis, and gastritis;

Fatty changes and senile sclerosis of the aorta and its main branches;

Anascara; etc.

Both kidneys were red-brown, contracted and hard. The right weighed 155 grams, the left 170. There were marked arteriolar fibrous thickening and hyalinization of the glomerular tufts. The heart weighed 525 grams, the spleen 340 grams, and the liver 1560 grams.

Dr. Carl A. Johnson: The clinical and laboratory changes observed in this patient illustrate the very rapid progress of the disease in patients with malignant hypertension. To illustrate this more clearly, the following table has been prepared from the laboratory reports of this patient:

TABLE 1

Chemical Examinations of the Blood

	March 1940			April 1940
Date	4	11	15	1
Urea N	35	62	74	225
N.P.N.	60	88		260 plus
Creatinine	2.2	3.2		8.6
Sugar	113			
Cholesterol	240			
Alkali Reserve		60.7	48	28.9
Albumin				4.5
Globulin				1.5
Serum Proteins			6.2	6.0

In less than one month the urea rose from 35 to 225 and the N.P.N. rose from 60 to 260.

The electrocardiogram showed a slurring of QRS-I and an isoelectric T-I, a depression of ST-II and inversion of T-II, an upright QRS-III and inversion of T-III. The changes of myocardial damage found in the electrocardiogram could be expected, yet, in spite of the blood pressure and the findings of the markedly hypertrophied left ventricle, no left axis deviation was present.

This patient illustrates the rapid changes in the clinical and laboratory findings in the typical course of a malignant hypertension, with death in uremia. I would like to illustrate by a brief

case report, the clinical course of a patient with malignant hypertension who died from septic infarct of the lung following an acute coronary occlusion.

A colored male, age 46 years, was admitted to St. Luke's Hospital on Dec. 12, 1939 and died on Dec. 17, 1939. His complaints were: shortness of breath, orthopnea, swelling of the ankles, weakness, palpitation, and hypertension. He was at the Hines Hospital in April 1937 where his hypertension was discovered. He came under my observation in June 1937 with the above symptoms. The past history was negative except for a chancre in 1928, although repeated Wassermann tests later were negative. The patient did fairly well on medical management until his last admission to the hospital, when he failed rapidly and died. Examination showed an elevated temperature, pulse and respiration. The heart was enlarged and boot shaped. By x-ray, in 1937, it occupied 63% of the chest and in 1939 66%. The heart rate was rapid, the tones of poor quality, and a gallup rhythm was present. X-rays of the chest revealed a mass in the right lower lobe and a right pneumothorax. The electrocardiograms indicated myocardial pathology. The blood pressures were of unusual interest:

Year	1937	1938		1939	
Month	June	March	Jan.	April	Aug.
Blood Pressure	180	180	200	210	170-150
	130	130	150	160	130-120
Rhythm	Normal	Gallup	Gallup	Gallup	Gallup
					Alternation

On December 17, 1939 the blood pressure was 150/130 and the alternation was so severe that only every other beat could be heard over the brachial artery.

Anatomical diagnosis: Malignant nephrosclerosis: primarily contracted kidneys; multiple cortical adenomas of the kidneys; marked hypertrophy of the myocardium of the heart; fatty changes of the lining of the aorta, the pulmonary and systemic arteries; large healing infarct of the myocardium of the left ventricle and septum of the heart; fibroplastic myocarditis; multiple mural thrombi of the left ventricle and right auricular appendage of the heart; large liquefied infarct with ruptured pleura of the lower lobe of the right lung; right pneumothorax and serofibrinous pleuritis.

Both patients were comparatively young at the time of death, the first 42 and the second 46 years. Both had been hypertensives before death, the first for 5 years, the second for 3 years. In all probability, then, they represent the malignant phase of benign or essential hypertension. The first case illustrates the very rapid changes in blood chemistry with death in uremia, while the second illustrates a less common cause of death from coronary occlusion with an infarct of the lung which became septic. The changes in the kidneys were of malignant hypertension which apparently had not progressed enough to produce the blood changes of uremia. In summary, the reports of these two patients illustrate the course of the malignant phase of essential hypertension, one with death in uremia, and the other with death from coronary occlusion and an infarct of the lung.

CASE 3

A white male, aged 75 years, entered St. Luke's Hospital on Mar. 7, 1940: death April 5, 1940.

Chief Complaints: Hematuria.

History: The patient first entered St. Luke's Hospital complaining of a lump in the right groin in Nov. 1939. A diagnosis of incarcerated inguinal hernia was made and corrected by surgery. At this time, he had hematuria but refused cystoscopic examination. He re-entered the hospital on Feb. 5, 1940, complaining of hematuria of 5 or 6 years' duration, nocturia for one year, and slight burning on urination for 5 or 6 days. He re-entered on March 7th because of continued bleeding. For the past 5 or 6 years the patient has had intermittent hematuria which lasted for 2 or 3 days and would disappear for 3 or 4 months. The last attack was the most severe. The blood was always evenly distributed in the urine and never more prominent at the end of urination. He had no urgency, dysuria, or difficulty in starting the stream and never had any pain in the flanks or abdomen. His last entrance on March 7th was 2 weeks after a transurethral resection of a papillary tumor of the bladder, following which the patient continued to bleed.

Physical Examination: The temperature, pulse and respiratory rates were normal and the blood pressure 160/90. The lungs were essentially negative. The heart had an enlargement to the left anterior axillary line and a "boot" outline. There was a loud systolic murmur but no irregularities. The abdomen was negative.

Laboratory Findings: The biopsy specimen obtained at the operation was diagnosed as a papillary carcinoma. Numerous examinations of the urine revealed a low specific gravity rising only when blood and albumin were present in considerable quantities. Erythrocytes were always present in variable amounts and leucocytes and bacteria increased in amount during the last two weeks in the hospital. At this time the leucocyte count, which had been approximately 11,000, rose to 21,000 and the differential count revealed a neutrophilia. The hemoglobin dropped steadily as did the erythrocyte count, from 14 to 3.6 gms. % and from 4,500,000 to 1,350,000 per c.mm. respectively. The blood chemistry value of the non-protein nitrogen was 35 mgms.%, rising to 66 mgms.% shortly before death and the carbon dioxide combining power remained approximately 52 volumes per cent. at all times.

Course: A palliative operation was done transurethrally and later a fulguration for the continuous bleeding. Ringer's solution and glucose were given intravenously in large amounts as well as blood transfusions, but the patient failed to rally and he died, 1 month after the last entrance to the hospital and about 5 or 6 years after the onset of his illness.

Anatomic Diagnosis

Extensive infiltrative and ulcerated carcinoma of the urinary bladder;
Carcinoma invasion of the perivesical tissues;
Carcinoma obstruction of the ureteral orifices;
Bilateral hydroureter and pyelonephritis;
Acute fibrinous (uremic) pericarditis;
Primary colloid carcinoma of the stomach;
Carcinoma invasion of the peritoneum of the stomach;
Acute verrucous mitral endocarditis;
Recent infarcts of the spleen;
Ascites, hydrothorax, anasarca; etc.

The indurated urinary bladder extended 5 cms. above the symphysis pubis. The peritoneum on the posterior wall had numerous single and confluent tumor nodules ranging to 1.5 cms. in diameter. On the right side, tumor tissues extended into perivesicle fat. The lining of the thickened urinary bladder above the trigone was markedly ulcerated. Both ureteral openings were involved. The seminal vesicles were small, the prostate had several regions of glandular hyperplasia. Both ureters and renal pelves were dilated with a purulent fluid. The renal tissues were reduced in amount and had focal abscesses. In the pylorus of the stomach was an ulcerated colloid carcinoma 8 by 7 cms. with raised scalloped edges and protruding into the lumen 2 cms. The peritoneum opposite was invaded. The carcinoma of the urinary bladder histologically consisted of large and small masses of pavement epithelial cells arranged in mosaics. The carcinoma of the stomach, in contrast, was glandular, consisting mainly of mucus secreting cells.

CASE 4

A white female, aged 37 years, entered St. Luke's Hospital on March 22, 1940: death April 6, 1940.

Chief Complaints: Excruciating precordial pain, dyspnea, and exhaustion.

History: The patient gave a history of a single attack of rheumatic fever 17 years before. Two years before entrance to the hospital, she had an attack of dyspnea and ankle edema, and this with extreme exhaustion forced her to bed. While previously, moderate exertion would provoke slight dyspnea, following this episode even slight exertion provoked severe dyspnea. There was a similar attack one year before admission. Two weeks before, there was a sudden attack of precordial pain followed rapidly by dyspnea, exhaustion, and edema of the lower extremities. She then remained in bed without further pain until 2 days before entrance to the hospital, when there was a sudden excruciating precordial pain with associated pain over both shoulders and radiating down both arms.

Physical Examination: She had a blood pressure of 111/74, a respiratory rate of 26, and a heart rate of 116 with a radial pulse of 98. There was a grayish pallor, cyanosis, fluid in both pleural cavities, but more marked on the right and edema of the lower extremities. The heart borders were percussed at 12 cms. to the right, and 7 cms. to the left of the mid-sternal line. The heart rate was completely irregular. The liver was at the umbilicus in the midline and reached to within one finger's breadth of the right anterior superior spine. The spleen was questionably palpable, and there was tenderness in the right upper quadrant.

Laboratory Findings: The erythrocytes were 4,400,000, the leucocytes 20,600, and the hemoglobin 11.6 gms.%. The urea N was 33 mgms. and the total NPN 54.6 mgms.%. Urine examination was negative, except for a slight amount of albumin. The blood serum Kahn was negative. Electrocardiographs taken on Mar. 9th and 30th revealed right axis deviation, auricular fibrillation, and marked myocardial damage.

Course: The patient became progressively worse with absolute bed rest, sedatives, digifolin, and general care. She became comatose on April 6th. The patient failed to respond to caffeine sodium benzoate and before oxygen could be administered, she died, 14 days after entrance to the hospital, 2 years after the onset of marked cardiac symptoms, and approximately 17 years after the single acute attack of rheumatic fever.

Anatomic Diagnosis

Chronic calcified fibrous mitral endocarditis — mitral stenosis;
Dilated auricles of the heart;
Hypertrophy of the myocardium and dilatation of the right ventricle of the heart;
Mural thrombosis of the left auricle of the heart;
Mural thrombosis of the right branch of the pulmonary artery;
Multiple organizing infarcts of the right lung;
Infarcts of the myocardium of the left ventricle, the spleen, and both kidneys;
Fibrous thickenings of the leaflets of the aortic and tricuspid valves of the heart;
Chronic passive hyperemia of the lungs, liver, kidneys, and spleen;
Hydrothorax, ascites; etc.

The heart weighed 315 grams. Diagonally from the right auricle to the left apex it was 18 cms. and at the base it was 14 cms. wide and 7.5 cms. thick. The pulmonary veins and left auricle were markedly dilated. A mural grey-red thrombus 1 by 2 by 2 cms. protruded into the left auricle from the auricular appendage. The mitral leaflets were fused and thickened by calcified fibrous tissues. The mitral opening was a narrow crescentic slit 2.2 cms. long.

The leaflets of the tricuspid and aortic valves were thickened slightly by fibrous tissues. The endocardium of the left ventricle septum had several large fibrous thickenings. A recent infarct of the lateral wall of the left ventricle, 3.5 cms. in diameter, extended from the septum at a level 3 cms. above the apex. A mural thrombus of the right branch of the pulmonary artery extended 2 cms. from the hilum of the lung and was 1.5 by 1 cms. Both kidneys were marked by multiple retracted scars, and the spleen had a large recent infarct. The right lung had several recent infarcts.

Dr. Carl A. Johnson: When I was called to see this patient at her home, the symptoms were those of cardiac failure. As mentioned, her first attack of rheumatic fever occurred at the age of 19 years. Following that, she had two or three other attacks which confined her to bed, and in general she did fairly well until within two years of her death. Two days before admission to the hospital she developed an excruciating pain in the precordial region which radiated down the inner aspect of her left arm.

On examination the patient appeared extremely ill, was orthopnic and had a subicteric tint to her skin. No petechiae were found. Heart findings were those of a double mitral lesion with pericarditis and effusion. Two electrocardiographs were taken, the first showing a normal mechanism, but with evidence of myocardial pathology, the second showing in addition an auricular fibrillation with a ventricular rate of 130. There was dullness over the right lower lobe of the lung posteriorly. The breath sounds were decreased or absent over this region. X-rays of the chest suggested that this was due to fluid and possibly an infarct of the lung. The liver was large and tender. The extremities were edematous.

The treatment consisted of diuretic management, morphine for relief of pain, and small doses of digitalis. In addition about 200 cc. of fluid was withdrawn from the right chest. The patient did not respond to treatment and died April 6, 1940.

The autopsy revealed rheumatic heart disease with mitral stenosis and regurgitation, with pericardial effusion and multiple infarcts of the heart, lungs, spleen, and kidneys.

Prognosis is usually thought of as being better in rheumatic heart disease when it has its onset after puberty, but in this case this was not true. This case also illustrates the marked tendency to embolic phenomina in rheumatic heart disease.

General comments on this method of presenting a clinical pathological conference: Such tremendous strides have been made in color photography, particularly when the miniature camera is used, that it is possible to make good reproductions very inexpensively. The illustrations which I have shown you were made in the morgue at the time of autopsy, and illustrate the excellent reproductions which can be made with ordinary equipment. This method of presenting material correlated with the method used by Dr. Hirsch at St. Luke's Hospital has stimulated a greater interest in pathology for clinicians and has proved invaluable in teaching medical students.

EARLY DIAGNOSIS OF POLIOMYELITIS

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(Editor's Note: This is the second of a series of four articles on poliomyelitis, appearing monthly in the Illinois Medical Journal.)

Acute anterior poliomyelitis in man in general follows a rather constant pattern and sequence of events. Following exposure (usually to an inapparent source) there is an incubation period which is believed to be about 14 days with extremes of 7 to 21 days. The illness first appears as a mild generalized ailment known as the "systemic stage" which progresses to a further stage in which symptoms of meningeal irritation are outstanding, the so-called "preparalytic stage." This is followed by the third stage which is characterized by the development of flaccid paralysis, the final "paralytic stage."

The disease may spontaneously terminate at any time during these various stages and there are ample grounds for belief that most infections with poliomyelitis never extend beyond the first stage so that the actual appearance of clinical, recognizable poliomyelitis is a rather exceptional occurrence in the not uncommon disease.

The first stage as noted above is usually only a mild generalized malaise with upper respiratory or mild gastro-intestinal symptoms. The physical findings in general are a fever of about 101°, a mildly injected throat and some cervical lymph adenopathy. The spinal fluid at this stage shows no abnormal changes. It is obvious that in the

absence of a specific test a diagnosis of poliomyelitis cannot be made in this stage.

It is important to keep in mind that poliomyelitis has its inception in this rather insidious manner; remembering this, the physician will not ignore such an illness during the summer and fall in the presence of an outbreak, but will continue to observe the patient for further eventualities.

If the disease is not abortive, it progresses to the second stage either without interruption, or after an interval of 12 to 48 hours during which the patient appears to have recovered, the so-called "dromedary" course.

In contrast to the first stage, this second stage is characterized by specific signs and symptoms which indicate extension to and involvement of the central nervous system by the infection. In the usual spinal type of poliomyelitis, the average degree of fever is 101 to 102°, and there is headache which is either frontal or diffuse. The patient is usually irritable, anxious and complains of pain in the back of the neck and along the back, particularly in the lumbar area. Often the patient is hypersensitive and complains of the weight of the bed clothing, or commonly, if it is an infant or child, does not like to be held by its mother. There may also be muscle pain and tenderness.

The physical examination discloses a patient quite ill and revealing a moderate to severe degree of prostration. The sensorium is only rarely impaired; in fact, the patient is usually very alert and responsive. Tremors of the extremities of various types may be noted. The face is usually flushed and frequently accompanied by a circumoral pallor. Diaphoresis may be marked. There may be slight or moderate injection of the pharynx with cervical lymphadenopathy. Otherwise the general physical examination is remarkable for the absence of significant findings.

A careful neuro-muscular examination is necessary to help establish a diagnosis. Slight or moderate neck rigidity is present with resistance to complete flexion of the head. A similar moderate back rigidity may be elicited with pain and resistance on attempting to flex the back completely. A head-drop is frequently present. The "spine sign" may also be observed when the child is asked to assume the sitting posture due to the rigid back. The Kernig and Brudzinski signs are inconstant.

At this stage muscle power is intact although some limitation of motion may be observed due to muscle tenderness. The reflex findings are extremely variable. The superficial reflexes, the abdominals and ceremasterics, are either sluggish or absent. The deep tendon reflexes vary considerably. Early in the disease they are very often exaggerated, but as the illness progresses and nerve cell destruction occurs, the reflexes become sluggish and finally disappear. The significant reflex findings are: first, a change in the character of the reflexes between examinations, and second, an inequality of corresponding reflexes.

A spinal puncture must be performed in order to further aid in establishing a diagnosis. A "bloody tap" must be avoided to permit an accurate examination. In poliomyelitis the spinal fluid is usually under increased pressure and is clear or slightly hazy in appearance. The cell count is usually increased, averaging around 250 per c.mm., but may range from 10 to 1000, and these wide variations must be kept in mind. These cells are usually lymphocytes and mononuclears, although at times early in the disease polymorphonuclear cells will predominate. This polymorphonuclear pleocytosis is usually only temporary, for subsequent spinal punctures will disclose the predominance of lymphocytes and mononuclear cells. The albumin and globulin are both moderately increased; the sugar is normal; the fluid is sterile.

The third and final stage, the "paralytic stage," is characterized by continuation of fever, malaise, prostration, signs of meningeal irritation; but the outstanding and distinguishing feature of this stage is the appearance of weakness and paralysis which is flaccid in nature and is accompanied by diminution or loss of the corresponding reflexes. The paralysis is very variable; it may be limited to one muscle group or to the muscles of one extremity. On the other hand, there may be spotty and widespread weakness of varying muscle groups or there may be extensive and severe and more complete paralysis of most of the muscles of the body.

Following the appearance of paralysis, the temperature may drop rapidly and convalescence set in. However, the disease may not terminate so abruptly after the appearance of the initial paralysis. The paralysis may extend over a

period of days with eventual involvement of the muscles of respiration.

Convalescence is usually uneventful and may be prolonged, depending upon the degree and severity of motor nerve damage. Rarely, however, recrudescence of the infection may occur after one or two weeks of convalescence with return of acute symptoms and further progression of paralysis.

"Bulbar" and "encephalitic" poliomyelitis, a form in which the major seat of infection is in the brain and medulla, is less frequent than, and distinctly different, from the spinal type discussed above. The onset is more acute and the course more fulminating. The prodromal symptoms are frequently of very short duration and may be absent. The second stage of meningeal irritation is characterized by a higher temperature, usually 104 to 105°, a greater degree of prostration, extreme irritability and at times somnolence or stupor. Headache is usually more severe, and emesis may be marked. Evidence of meningeal irritation and of spinal muscle involvement are less apparent. Neck and back rigidity may be only slight in degree and at times completely absent. The spinal fluid usually discloses a relatively low cell count between 10 and 50, with a predominance of lymphocytes.

The further course of this form of poliomyelitis is characterized by involvement of various nuclei of the cerebral nerves. The common paralysis is that of the pharynx and palate with resultant inability to swallow and the collection of mucous in the throat of the patient. Involvement of the other cerebral nerves is reflected in ocular, facial, lingual paralysis, etc.

SUMMARY

Accurate diagnosis of acute anterior poliomyelitis depends on a complete history, a careful examination, and lumbar puncture.

Examination cannot be cursory, it must be deliberate.

A neuro-muscular examination must be performed. If any or all of the three common signs — stiff neck, rigid spine or ataxic tremor — can be demonstrated, a lumbar puncture should be done without delay.

The examination of the spinal fluid is reliable confirmation of the diagnosis before paralysis appears.

DIAGNOSIS AND MANAGEMENT OF EARLY TUBERCULOSIS

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Pulmonary tuberculosis is a serious disease; one which still causes more deaths among those in the productive years of life (25-45) than any other disease.

I think we can all agree that almost all cases of pulmonary tuberculosis at some time during the development of the disease were early or minimal cases and at that time should have had almost 100 per cent. chances of recovery.

How far they fall short of this result is shown by the nearly 4000 annual deaths from tuberculosis in Illinois alone.

The question to be discussed then appears to be "How is pulmonary tuberculosis to be found early enough to give the attending physician fair and proper opportunities to heal or arrest the tuberculous pathology in his patient?" and second, "What treatment is warranted or perhaps demanded to obtain such favorable results?"

The physician in general practice is, of course, the one who should see every potential case of tuberculosis before any other — this has always been and should always be. Any procedure planned or adopted for the discovery and for the subsequent treatment of tuberculosis should have the approval of local physicians and of organized medicine.

There are fundamental factors involved in the discovery of early cases of pulmonary tuberculosis which are such as have tended to eliminate the physician in general practice from the picture. This should not be true.

The average man in general practice rarely has the opportunity or the satisfaction of making a diagnosis of pulmonary tuberculosis in the early beginning stages confirmed, as early, by x-ray examination and by absence of tubercle bacilli in the sputum.

When the physician makes his diagnosis, it is usually after the disease has progressed into the moderately advanced or far advanced stage.

There are reasons for this — such reasons, as remove all question of criticism against the physician himself.

First of all it should be appreciated that it is

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uncommon for symptoms to present themselves in the early stage of tuberculosis — true there are a few who present minor blood spitting or slight pleuritic pains, more often than not entirely overlooked as not sufficient in importance in the patient's opinion to warrant seeking medical advice. Then there are a small number who develop acute early lesions which enforce prompt medical attention, but by far the vast majority present no symptoms whatever, the lesion advancing more and more month by month until fatigue is noticed or vague digestive disturbances, slight hacking cough or loss of weight occur, when finally medical advice may be sought, the x-ray at this time most often demonstrating an advanced lesion in one or both lungs.

While we are speaking of x-ray, may we say at this point that rarely can one determine the true extent of a tuberculous lesion without the x-ray with proper technique and with efficient interpretation. One may be of the opinion that a lesion is early or minimal only to have the x-ray demonstrate more correctly a moderately or even a far advanced lesion.

The importance of this absence of symptoms may be stressed by quoting the findings in Massachusetts where over 400,000 students in schools of that state have been examined for tuberculosis.

Zack recently reported that there was on the average a period of three years between the x-ray demonstration of early pulmonary lesions and the development and appearance of symptoms.[1]

In other words, then, the average physician is presented with a patient for diagnosis about three years after the pulmonary lesion began, even though the patient presents himself for study promptly when symptoms do occur.

It is then not to be wondered at that our institutions for the treatment of tuberculosis receive, on the average, only 15-17 per cent. of their patients in the early stages.

These facts indicate the problems involved in any control program, for it is axiomatic that control of tuberculosis by methods intended to restore health to those afflicted depends upon treatment of the early minimal lesion and not by treatment of advanced lesions after so large a part of the chances for recovery have all ready been lost.

The value to public health to be anticipated from the proper care of advanced cases is another story not discussed here.

Because of the problem outlined above indicating the usual lack of opportunity for the average physician to see an early minimal case of pulmonary tuberculosis, special methods of procedure have been developed intended to find the early cases.

Thus we find in this and other states annual surveys being made of high school and other groups; skin testing to determine those previously infected by tubercle bacilli and following this up by x-ray studies of all found to be infected to determine which, if any of the group, have developed demonstrable lesions.

What is the rational of this procedure? First it is felt that the serious or re-infection form of pulmonary tuberculosis or the chronic pulmonary tuberculosis we all think of, rarely develops in the lung before the early teen age, but that as the age of the group increases beyond fourteen, more persons develop early lesions so that it is now understood that about 85 per cent. of all cases of pulmonary tuberculosis have their beginning in the group between eighteen and thirty years of age.

Therefore it is logical to begin the search for beginning cases in the high school ages anticipating the discovery of a few cases each time such a large group is re-examined. Such re-examinations should therefore be made each year until each in the group passes the age of twenty-eight or thirty after which it is believed to be uncommon for a new case to develop among those whom the x-ray has proven at that age (28) to be free from demonstrable lesions.

While it is known that most pulmonary lesions of serious type, develop in persons after fourteen years of age, it is of course recognized that under proper conditions serious lesions develop before fourteen but excepting for infants these do not represent a large per cent. of the total. Where there is an unrecognized open case or positive sputum case of pulmonary tuberculosis in a family with young children or where the individual with positive sputum through ignorance or otherwise refuses to take such sanitary precautions as will protect infants or young children from repeated massive infections then serious forms of tuberculosis may and do develop in such youngsters with disastrous results.

That these are somewhat uncommon is shown by our State Department of Public Health reports which show for 1938 a total of 3995 deaths

from tuberculosis, all forms, of which 23 were in infants under one year of age, 25 of one year of age, dropping to twenty for those two years of age, 10 for those three years of age and to 6 for those four years of age. (These cover the entire state). It is interesting to note that of these 84 total deaths among children under five years of age, 68 or 80 per cent, occurred in Chicago, where one might expect certain economic groups to be living under sanitary conditions perhaps inferior to those in down state Illinois.

It would then appear that the tuberculosis problem as such is largely a matter of concern in that older age group in the teen ages and up to thirty years of age.

It should be pointed out here that such procedures for finding early cases of tuberculosis by skin testing large school and other groups and following this by x-raying those shown to be infected enjoys the approval of the medical profession at large and of the local community physicians in particular and such demonstrations should always be inaugurated with their approval and cooperation. Reports of positive diagnosis should always be furnished only to the family physician of the person involved.

What can the practicing physician do concerning the finding of early cases of tuberculosis aside from endorsing and cooperating in such large scale demonstrations referred to above?

First of all it should be stressed again that the family physician should be placed in a position where he may grasp the opportunity to see and care for early tuberculous lesions and there is no valid reason why any physician should not avail himself of such opportunity. First of all, of course, he should realize the possibility of a tuberculous infection in any of his cases whether or not there is a history of contact with a case of tuberculosis. He should, of course, always think of the probability of tuberculous infection in all those in whom the history shows contacts with others known to suffer or to have suffered from tuberculosis, and, with these and with those with no such history the truth regarding infection may be very simply discovered by giving or doing a Mantoux skin test. This skin test while simple does disclose the presence of tuberculous infection but does not indicate whether disease or active tuberculosis has resulted.

The test will tell him, however, those who should be studied further, including always x-ray films taken with equipment which at least equals the minimum requirements for chest diagnosis ie 100 M.A. 1/10 sec. exposure and 6 ft. distance. X-ray films taken with equipment below standard show so much distortion or lack of detail that early lesions may be overlooked. It is equally important, however, that x-ray films should be interpreted by one whose experience in such matters entitles him to an opinion as to the findings.

The family physician may then easily and quite simply determine the presence or absence of tuberculous infection in every patient he sees, man, woman or child and from this point on determines first, what if any damage has been produced by such infection by taking or by having taken good x-ray films. In the case of an apparently healthy child under thirteen or fourteen years of age with a positive skin test the inferences of this finding directs him to the testing and x-ray of other members of that child's family to bring to light the person responsible for the infection of the child. The child may not need treatment only repeated x-ray studies from year to year. Surprising results follow such searches among the older members of the family. Chronic bronchitis may become what it really is — tuberculosis. Asthma may now become tuberculosis or the supposedly healthy grandmother may be discovered to have chronic fibroid tuberculosis with sputum positive for acid fast bacilli. What we are suggesting is a routine search for tuberculosis among all those we contact professionally. The discovery of early cases of tuberculosis would not be difficult if we all were looking for it instead of waiting for it to disclose itself later.

We have referred to the studies of high school students now being made in this and in other states; studies which result in the discovery of many unsuspected cases of tuberculosis. As a result of such studies we are informed of a fairly large group (about 18% of the total examined in our studies) who have been infected with tubercle bacilli and in whom x-ray studies disclose no active pathology. The families of these students should however, furnish us with a most important clue as to the source of their infection. All members of such families should be immediately examined for tuberculosis since it is entirely probable that some member will be

found who is responsible for the infection of the student.

Pomeroy[3] has recently reported on "The Importance of Intensive Home Follow-up in Tuberculin Testing School Program" with the following results. In 1937-38 following 1429 positive skin tests with discovery of 14 active cases of tuberculosis the follow-up examinations in the homes, represented by the positive skin tests, revealed 18 additional active cases bringing the total to 32. In 1938-39 following 3194 positive skin tests discovered in the schools there were found 24 active cases. In the home follow-up there were found 53 additional cases making a total of seventy-four.

Pomeroy quotes Plunkett that "if a child reacts to tuberculin, the younger the child, the more likely it is that the infection occurred in the home."

Treatment: The importance of early prompt discovery of the beginning tuberculous lesion is vital if the individual is to have his best chances for recovery but the method of treatment of such individual is equally important. When it is recalled that diagnosis is possible on the average three years before symptoms make one suspect the presence of tuberculosis it is encumbrant upon us to so handle these early cases that recovery and arrest of the disease be accomplished while the patient is still symptomless and equally important, before open lesions develop and thus before acid fast bacilli are excreted to infect others in the family.

I think we can agree that most cases of tuberculosis were at one time minimal in extent and *that the subsequent course of development* depended either upon ignorance of its presence until it advanced or upon lack of energetic and prolonged treatment once the lesion was recognized.

Pulmonary tuberculosis even in the minimal or beginning stage *is a very serious disease.* This we may prove only by citing the thousands *and thousands of deaths from tuberculosis* among those whose minimal lesions were permitted to progress and progress to cause these deaths. Pulmonary tuberculosis is essentially a tuberculous pneumonia (even when there are no *symptoms) but contrary to non-tuberculous* pneumonia it is not self limited in its course and rarely clears or resolves entirely leaving behind a normal lung structure as does non-tuberculous pneumonia.

Not only is active tuberculosis a pneumonic process but the tubercle bacillus and its products have a definite destructive action on pulmonary tissue with the well known tendency to cavity formation with all the attending dangers and the subsequent difficulties in permanent healing of these cavities.

It would appear then, considering the difficulties to be anticipated in treating and healing the advance case of tuberculosis that our treatment of the early case even without symptoms should more nearly express our concern over the possible failure of the patient to check and thoroughly arrest the lesion while still early and while still symptomless.

We are not convinced, however, that the average early case when diagnosed is handled in this manner. Is allowing the early case the commonly permitted bathroom privileges a demonstration of our concern or fear that the disease may progress? Is allowing the early case the privilege of sitting at the dining table showing this concern?

So far as we now know rest is the only therapeutic measure of distinct value in the treatment of pulmonary tuberculosis. Do we show our concern when the routine mapped out for the patient fails to provide for the patient the maximum amount of the only effective weapon we have — rest?

It is, of course, thoroughly appreciated that strict bed rest alone in many cases of tuberculosis fails to check the disease and to finally produce arrest and that a large per cent. of our patients require some one or perhaps several of *the surgical procedures now available to so place* the lung at that degree of rest as will give nature *the chance to effect and continue the healing* process. In fact Chadwick & Evarts have just published[2] a paper on "Treatment of Pulmonary Tuberculosis in Adolescents" in which they reach the following conclusions "pneumo-thorax should be instituted as soon as possible after diagnosis is made even in minimal cases."

Following the experiences of Trudeau, Osler, Flick, Bowdish and others some thirty years ago, the medical profession in many states, including Illinois, has recognized the valuable aid of the tuberculosis sanatorium.

Thus we find 22 municipal and county sanatoria operating in Illinois and in addition to these institutions there are 38 counties which

have voted upon themselves a special tax to raise funds with which to finance the care of their tuberculous in private and public sanatoria operated in other sections of the state. These institutions serve to stop the ever present dangers inherent in a communicable disease, afford each patient an opportunity to learn more clearly his individual responsibilities in our efforts to get him well, as well as, permit the attending physician a wider range of therapeutic methods in treatment.

It appears to be almost an impossibility to care for an open case of tuberculosis in the home without grave risk of this patient infecting other members of the family and should these members consist of one or more in the late teen ages or in the twenties then the danger becomes real that his disease will sooner or later be followed by active tuberculosis in one or more of his family.

The financing of a long drawn out illness, such as tuberculosis, is almost impossible for the average family, especially if the wage earner is the patient. Such patients deserve community help. It is hard to pin on the individual with tuberculosis all of the responsibilities for his disease. It has been well said that "tuberculosis is not caused by civilization but by the mistakes of civilization."

The tuberculosis sanatorium offers to the medical profession a valuable aid in his search for opportunities to further the interests of his patient.

The modern tuberculosis sanatorium today is instituting surgical rest to the lung by means of pneumo-thorax maintained at least two years or longer, by means of operations to sever adhesions which may be limiting the effects of pneumothorax, by means of thorocaplasty, partial or complete or even bilateral partials. All this and more, intended solely to put the lung at rest so that the healing process has a chance to continue and to finally arrest the disease.

When one sees a patient with advanced pulmonary tuberculosis one should ask himself these questions: "Was this patient discovered in the minimal stage? If so, was he or she given every opportunity to obtain all of the bed rest possible," and lastly, "How long was the strict bed rest continued?"

Somewhere the answers to these questions will explain why the case is now an advanced one.

What guides are safe to judge the arrest of early pulmonary tuberculosis? How long should bed rest continue?

It may be wise at this point to state that pulmonary tuberculosis is not healed in a few months. Those who demand evidence of great improvement or cure for their patients in short order, such as three to six months, are doomed to disappointment and I am afraid their patients to worse. Of all the causes for failure to retain gains already made or to obtain permanent arrest of tuberculosis, none are equal to the one cause — too short a period as strict bed patients.

Here is an early tuberculous pneumonia producing no temperature rise, no cough, no fatigue, no loss in weight and perhaps even no rise in the blood sedimentation rate and we wish to have a guide which will tell us when to begin giving him liberties or exercise. The answer is, of course, the x-ray appearances of the lesion.

Occasionally, one sees the lesion gradually clearing and finally disappearing entirely — this is uncommon — more often and as a rule considerable clearing and absorption does take place but fibrotic infiltrations develop to remain for years, and it is the presence of nothing but fibrosis that first indicates the healed or arrested pathology.

After fibrosis has occurred and there are no unhealed areas then exercise may be begun on the basis that now we do, in fact, have an arrested lesion and exercise is indicated.

It should be appreciated, we stress, that exercise is indicated because the pathology is arrested, not because exercise has any place in the treatment of a lesion not showing true arrest by fibrotic infiltration.

The guide then is the x-ray and this will entail repeated x-ray studies from time to time over a period of months and months showing, in the favorable cases, gradual clearing and absorption of the pneumonic process and the laying down and development of fibrotic strands. When the x-ray shows no further changes taking place as compared with previous films and nothing but fibrosis persists in the pictures then the disease is truly arrested and the exercise program is indicated and then only.

The hard part of the treatment of pulmonary tuberculosis is now ready to begin.

It is unfortunate that many months of time

and patience have been required to bring about the arrest of the disease and that our patient is so anxious to get back to his job, but improper handling at this time may upset and ruin all the advantages so far gained. Exercise is a poison to the tuberculous lesion and, as such, it must be prescribed in small, slowly increasing doses, always studying by frequent x-ray its effects on the pulmonary lesion. No satisfactory schedule can be arbitrarily laid down as a guide for the amounts and kinds of exercise to be prescribed for an arrested case of pulmonary tuberculosis but it is often customary to permit one bathroom privilege (on the same floor level) per day for one week, increasing one bathroom privilege each week, provided no untoward result appears. When full bathroom privileges are enjoyed, then begin dining room privileges in the same manner. It is understood that otherwise all of the patient's time is spent in bed. Upon completion of this schedule, to full bathroom and meals, other types of exercise may be added, such as washing dishes for fifteen minutes, increasing fifteen minutes per week with this or some similar type of exercise. It does not take so long to work up thus, carefully, to an hour of exercise daily after which each month should add another hour of exercise.

It is entirely probable that useful work is a better type of exercise than simple walking since our patients obtain more satisfaction as they observe useful things accomplished.

It should be anticipated that thus bringing our patient to full eight hours exercise daily without x-ray evidence of damage will warrant our patient returning to his eight hour employment and to economic usefulness, at which time we may have the satisfaction of a job well done and that is what we all desire. Therefore, after all this, it would seem to be common sense to carefully and frequently re-check these arrested cases of tuberculosis. Perhaps a couple of years or longer has been required to place the patient back at work. Considerable patience on his part as well as on ours has finally brought success. This success must not be jeopardized by an attitude of indifference on his part or upon our part. Each arrested case of pulmonary tuberculosis has yet to prove permanent arrest of his disease. It would be well to re-check by x-ray every three or four months for a year or two and afterwards every six months for another year or two and after that re-check every year for an indefinite period of time. Upon evidence that all is not entirely well, it would be wise to forestall relapse or reactivation of the lesion by a lay-off from work for a short period if, by so doing, a prolonged illness may be avoided.

Summary: Every individual with tuberculosis should have the opportunity for diagnosis and treatment when the lesion is minimal. Every minimal lesion is potentially a far advanced fatal lesion and should be handled as such. All early lesions should be attacked with "all we have" at once, lest they be permitted to develop further to advanced disease. Early lesions may be discovered by x-ray examination only, and no other methods can check on their progress for better or for worse. The utmost in patience on the part of the patient and physician will bring success if persisted in long enough. Successful results in treating pumonary tuberculosis challenges the skill and resources of each physician.

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PREGNANCY AND TUBERCULOSIS

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The private physician is still the keystone of the tuberculosis problem and in the final analysis, his is the responsibility for the control of the spread of the disease. It also remains for him to allay the morbid fears of the patient's family and to give expert advice, mental comfort and happiness and a personal decision when particular emergencies arise in the conduct of the case of tuberculosis.

One of these emergencies likely to occur is pregnancy and the family physician should have a definite and logical course of procedure to follow when it occurs. The conclusions reached by reading the medical articles published in the past thirty years, both from general practitioners and specialists, shows that there is still a wide divergence of opinion, seemingly amply supported by statistics of the observers, as to the proper

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course of procedure when pregnancy and tuberculosis both are present. Some eminent men lean toward an active attitude, favoring interference by abortion in all cases of tuberculosis of the lungs, regardless of the type of disease, while others equally eminent, feel that the risk of pregnancy for a tuberculous woman is no greater, if properly treated, than for the non-tuberculous pregnant patient.

There is no doubt that the conduct of pregnant tuberculosis cases, based upon the extreme views expressed by the latter group, has been responsible for a lamentable sacrifice of human life, although with the progress of collapse therapy and early diagnosis the pessimism has not been as fully warranted as previously, and much of the harm that might have befallen these patients has been averted.

Skillen and Bogen recently reviewed the relationship between pregnancy and tuberculosis and quote the study of a group of 140 pregnant tuberculous animals at Olive View Sanatorium which showed about the same average amount of disease in pregnant guinea pigs as the controls.

If the raised diaphragm, analoguous to that produced by pneumoperitoneum, had a beneficial effect by producing pulmonary collapse, it would be expected that this effect would be manifested particularly in animals infected by inhalation and not in those with abdominal infection from subcutaneous injection. In the experiment of Skillen and Bogen no such difference was observed.

Steinback in discussing the effect of lactation says that if the drainage of the mother's system by lactation was the important factor, as has been suggested, removing the young at birth should have a beneficial effect and wet nursing an ill effect. Experimentally, tuberculous guinea pigs given excess progeny to nurse showed a slightly higher mortality rate, but the extent of the tuberculous lesions observed in these animals was no greater than that in the controls or in those whose young were removed.

The fact that the rate of death from tuberculosis is higher for young women between the ages of 15 and 30 than for other females or for young men of the same ages has been ascribed in part to increased susceptibility resulting from pregnancy, according to Norris. Arnold states that a study of vital statistics indicates that the difference is not constant, being marked years before pregnancies may be expected to occur but disappearing when the child-bearing period is only half completed. Analysis of the records of death among young women in New York City from tuberculosis reveals rather an infrequency of pregnanacies in the group involved. More intensive study on the subjects concerned shows an incidence of intimate contact and massive exposure, as in the case of a nurse or personal attendant on a consumptive, which may account for the difference.

Skillen and Bogan after their study of patients at Olive View, conclude that the direct physiologic effect of pregnancy, parturition and lactation may actually represent a minor aspect of the real problem. One of the most important factors in the treatment of pulmonary tuberculosis is rest. It is almost impossible to induce many mothers to take the amount of rest required for their condition, and particularly to leave their children and go to a sanatorium for the treatment they require. Other therapeutic factors are also closely linked with the economic situation of the patient. If the added expense of bearing and caring for a child means that the mother will be deprived of adequate food, rest and medical care, it cannot be lightly incurred. Adequate economic aid, however, may often safeguard the mother even better than interference with pregnancy.

The treatment of tuberculosis in a pregnant woman should not be interrupted by the pregnancy. Pregnancy proceeding to successful delivery and recovery while the lung remains collapsed under artificial pneumothorax, phrenic interruption or even thoracoplasty is by no means unusual today. A recurrence developing after delivery occurs in only a few of properly managed cases.

The age of the patient, the stage of the disease and the type of the lesion have a distinct bearing on the prognosis. Unfortunately it is not clear just what we mean by the term "stage of the disease" and there is no clear definition of the type of lesion" leaving room for considerable leeway in interpretation. The treatment would be quite different in a patient with a chronic fibroid or cavitation type of disease, with only a short expectancy of life, than it would be in a young woman in early pregnancy with a very active infiltrating and exudating lesion. It has

been repeatedly stated that tuberculous women may enjoy a temporary remission of the disease during pregnancy, only to relapse with increased activity after parturition.

The avoidance of pregnancy is the most important primary consideration for patient and physician. No woman who has active tuberculosis should consider pregnancy for at least two years after complete arrest of her tuberculosis, or even longer if the treatment required to heal the lesion was difficult, or if there is even the slightest doubt in the mind of her physician. The diagnosis of arrest must be based on a very careful study of the entire progress of the case and not be arrived at casually. Also, every available diagnostic aid must be used, resolving any doubt against pregnancy. Many tuberculous patients appear to improve throughout pregnancy, only to show a decided tendency toward aggravation of a mild lesion or activation of a dormant tuberculosis the first few months after delivery. This type of case is especially hard to prognosticate and should be sufficient reason alone for forbidding pregnancy.

If pregnancy has taken place in a tuberculous woman, there are two courses that can be followed, requiring the closest study and keenest judgment for a decision as to the proper course treatment must pursue. One is to interrupt the pregnancy, then devote all and every modern method to cure her. When the cure of her tuberculosis is complete then, and then only, let her bear children. The other is to immediately place the patient in a tuberculosis sanatorium for observation, from six weeks to three months. (It is better to interfere too soon than too late). If improvement is satisfactory, the lesion is found to be minimal, and the sedimentation test satisfactory, the case may be allowed to go on, using collapse therapy and all other means indicated to control the tuberculosis. If the tuberculous condition grows worse, interruption of pregnancy is indicated immediately, preferably before the end of the second month, followed by active tuberculosis therapy.

The secondary question, then, to decide in the presence of tuberculosis and pregnancy can be stated thus: Is therapeutic abortion justified in tuberculosis? After reading the voluminous articles and reports of innumerable investigators, the widely divergent views of the writers seem irreconcilable, but on careful study the general principles that apply become very simple — more simple than trying to reduce them to print.

In some cases, particularly advanced active cases, abortion acts as a stimulus to the chest lesion, and non-interference is preferable, especially if it is felt after careful observation that abortion will mean death for both mother and child, while allowing progress of the pregnancy may mean death of the mother, thus sacrificing everything for a live child. Early induction of labor and forceps delivery may be indicated. With collapse therapy, even these apparently hopeless cases can often be carried through a normal pregnancy and delivery, treatment being continued after delivery. By doing phrenectomy or phrenic crushing and using greater than usual pressure, by pneumothorax, and, in selected cases, holding the diaphgram by use of pneumoperitoneum after delivery, the prognosis is materially improved. The efficacy of collapse therapy may limit the indications for therapeutic abortion in this type of case.

It may be stated as a general rule, however, that in most cases of tuberculosis, it is best to remove the pregnancy and let the woman have all her facilities for conquering the tuberculosis. Then, after the danger from tuberculosis is past, let her produce the offspring she desires. In other cases, as stated above, a rather large group becoming larger as a result of early diagnosis and collapse therapy, and selected by careful observation, with the patient constantly under good sanatorium treatment we may preserve the fetus, and therapeutic abortion may be withheld. Artificial pneumothorax often brings an active lesion under control and pregnancy may proceed without complication. Moreover, if the lesion is well collapsed, it is not usually necessary to separate the mother and infant after delivery to prevent infection of the infant from the mother.

The question of pregnancy and tuberculosis needs the closest cooperation and study, not only by those who practice the treatment of tuberculosis, but by obstetricians and internists, to the end that the lives of the mothers may be preserved, their health conserved, and the lives of a large number of infants saved.

With a better and more intelligent understanding of the problem on the part of the tuberculosis specialist and the obstetrician, the pregnant tuberculous patient may emerge from her pregnancy experience (once looked upon as a

most dangerous and unjustifiable happening) almost, if not quite as safely as the non-tuberculous woman.

In none of these patients should lactation be permitted, as it increases the hazard for the mother by using her recuperative and healing powers for the production of milk. This viewpoint differs from that of Steinback quoted above. Where the case is open, there is great danger to the infant who is apt to acquire a tuberculous infection from the mother.

In the decision to interfere by abortion the social aspect must also be considered, because in many instances a woman would be unable to take care of her child and her home surroundings would not be proper for the welfare of the baby, which makes it necessary to terminate. The problem here, like the entire problem of tuberculosis, is not only medical but social. The religious aspect of the problem is purposely omitted from this discussion, but must be born in mind when outlining treatment for any given case.

The adoption of a universal practice of tuberculin testing all pregnant women, with x-raying of the reactors for active tuberculosis should be encouraged, and as voluntary tuberculin testing becomes more universal, spreading this campaign to the young adults, will mark a definite progress toward the prevention of this obstetric complication.

Irwin, says that, "in spite of experimental data on animals, pregnancy does constitute a serious drain on the tuberculous mother. The fact that she gains weight and looks better during pregnancy is misleading to the clinician and constitutes one of the most puzzling phenomena in clinical medicine. There is something that carries the chronically ill and doomed woman through pregnancy until her function with regard to propagation of the species has been fulfilled and then allows her to die, sometimes quickly. Had this phenomenon not been observed in the woman afflicted with cancer, diabetes and pernicious anemia, I would be inclined to believe that in the case of tuberculosis it is due to a gradually increasing partial collapse effect of the pregnant uterus. The rapid invasion of the disease shortly after delivery could certainly be explained by the sudden relief of the pressure allowing the lung to expand. This, then, suggests a definite indication for collapse therapy in the first few hours or days after delivery of the active, tuberculous woman who goes to or near full term pregnancy. Opinion as to proper procedure and treatment, I believe, now lies in the middle course. The improvement in the treatment of pulmonary tuberculosis by surgical means, added to the old rest and fresh air treatment, has changed the picture almost completely. The tuberculous patient who is seen for the first time in early pregnancy should be examined carefully by the phthisiolgist for activity, and his advice should be followed after observation of the patient for a short time."

One of the more recent methods to be employed in interrupting pregnancies is the x-ray technique for therapeutic abortion, which has a distinct value in pregnant tuberculous patients. Mayer, Harris, and Wimpfheimer at Mt. Sinai Hospital recently published their experience with x-ray as the means of inducing abortion and this seems an ideal method to use in tuberculous cases. After a consultation between the gynecologist, the radiologist and the phthisiologist, in which the question of intervention and method are decided upon, the patient is informed of the possibility of a permanent amenorrhea, a condition not wholly undesirable in a tuberculous patient.

The period of amenorrhea after treatment is very variable. In general it can be stated that in almost all of the patients below the age of 25 it is only temporary for from one to forty-eight months. In the age group twenty-five to thirty about one half remain amenorrheic, and as the age advances more reach a permanent menopausal point. In no case can menstruation be certainly forecast and a majority of the patients have some menopausal symptoms. If menopausal symptoms occur, they are usually mild and can be controlled by ovarian extract. After treatment, the patient usually aborts spontaneously, customarily in 19 to 35 days, with only slight bleeding. Convalescense is quite uniformly uneventful. On discharge, the patients are given contraceptive instructions, although the treatment can be repeated, if pregnancy ensues.

Briefly, the principles to be followed in the tuberculous pregnant woman can be stated under the following items.

First, no one has shown definitely that pregnancy is good for the health of a tuberculous

woman in any stage or type of tuberculosis. A neutral effect of pregnancy on a tuberculous lesion is not asked — the risks are too great.

Second, most investigators, easily 75 per cent. believe that pregnancy aggravates tuberculosis, while no one has proved that abortion properly performed, aggravates an early quiescent or arrested lesion, if proper tuberculosis therapy is followed afterwards.

Third, every one admits that pregnancy places a severe strain on a tuberculous woman's resources and strength, and that labor is fraught with immediate and remote perils.

Fourth, after labor or abortion, treatment for the chest condition should be carried on vigorously, treatment must be continued over sufficient time to guarantee arrest and should not be discontinued too early — in any event — only after very careful observation and study by an experienced phthisiotherapist. Subsequent pregnancies should be allowed only after careful study of the case has shown the chest lesion completely arrested or under complete control.

Sixth, therapeutic abortion should be done as early as possible when decided upon, preferably under spinal or epival anesthesia, but after the fourth month of gestation the effect of intervention is comparable to a full term delivery. With proper collateral care in cases that have not shown an acute flare up earlier, the risk can be safely assumed, the physician being ready to interfere as soon as labor starts, so as to terminate it rapidly, as by forceps, sparing the patient the stress of inhalation anesthetics.

HEPARIN FOR THROMBOSIS

Several methods have been developed for the administration of heparin. There are essentially only two methods that are useful in treating hospital patients. First, the Swedish clinicians have given up the administration of heparin by the continuous intravenous drip method and are now resorting to the injection of heparin solutions every two or three hours, keeping up the injections for from four to six days. Crafoord treats most of his cases in this way, giving about 50 mgms. of heparin (approximately 5,000 units) every two hours, for four to five days post-operatively. By this method the clotting time is raised quickly from a normal of four to five minutes to from fifteen to twenty-eight minutes. Two hours after the injection the clotting time has usually returned to normal. It will be understood that there will be a great variation in the clotting time of patients treated in this way.—Evans, Virginia, M. Monthly, April '41.

RESULTS IN THE TREATMENT OF PULMONARY TUBERCULOSIS

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Most phthisiologists are now convinced that collapse of the diseased lung is a specific remedy for pulmonary tuberculosis. They know that where this can be completely accomplished healing will nearly always follow. Whereas fifteen years ago it was felt that not more than fifteen to twenty per cent. of patients were amenable to this form of treatment, today in the better sanatoria the figure has risen to between forty and eighty.

This wide acceptance and extensive use of the procedures has been so recent that, in a disease which is always so questionably controlled, only today can one begin to evaluate results and estimate the importance of the new therapy.

The present paper is a study of the current status of six hundred patients suffering from pulmonary tuberculosis who were in residence in Edward Sanatorium between January, 1932, and December, 1937. This group seems especially worth studying because throughout this period those in charge of their care have been convinced of the value of collapse therapy and have used it at least to the limit of its effectiveness. The indications have varied from year to year as increased experience has directed, but throughout the period no patient, providing he had sufficient uninvolved lung to support life, has been permitted to grow worse or to remain for more than a few months in a stationary and chronic condition without some attempt being made to collapse the diseased lung areas. Phrenic nerve block and artificial pneumothorax, the minor and safe procedures, have been used on some cases which might have recovered without them, sometimes because open cavities and the nature of the lesions threatened extension of the disease and in other cases to hasten and assure recovery and to avoid the economic and psychological ravages of prolonged invalidism. The major surgical operations have been resorted to only when all simpler measures have been thoroughly tried and when experience has shown that without them recovery was impossible. A too careful consideration of statistics has not withheld their application from desperate cases which might

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have been and often were thus saved and restored to health. A successful thoracoplasty was performed on one patient who was sixty-nine years old.

This group is of particular interest also because there was no selection of cases. Every patient who applied for admission to the Sanatorium was accepted, regardless of the extent or stage of his disease and of the prognosis. Sixty-two were classed as hopeless at the time of admission and thirty-four died in less than a month after entering the Sanatorium. Ninety-two had such extensive disease that any form of collapse therapy was out of the question.

The statistics are especially valuable because of the completeness of the follow-up records. Only six of the six hundred cases have not been followed.

Not all of the patients can be said to have been treated at the Sanatorium. In a private sanatorium in a large metropolitan area many patients enter pending their admission to a public institution and some few others leave because of homesickness or dissatisfaction. Only four hundred forty-nine remained in the institution for a period of six months or more or were discharged with their disease arrested before this time.

The Treatment. If modern treatment is more radical surgically, it is also more radical medically. The idea of a tuberculosis sanatorium as a resort where chronically ill individuals lead a pleasant ambulatory existence is no longer correct. All patients with curable disease are kept on strict bed rest until the sputum has become negative and the x-ray shows no further improvement. Strict bed rest means being in bed twenty-four hours a day and sixty minutes an hour. Those with fever or acute disease are kept in single rooms to spare them the exertion of talking and laughing.

Heretofore the tendency has been to undertreat tuberculosis. Today one plans to overtreat it. Formerly as soon as a patient was afebrile he was put on graduated exercise. Today he is kept in bed until his disease is safely encapsulated. When he is ready for exercise he is ready to go home.

Because the possibility of reversing unfavorable progress is so great, close observation of the patients is essential. Each has an x-ray and sputum examination at least once a month. In acute cases the interval between x-rays is reduced to one or two weeks. Spread of the disease or prolonged failure to improve are indications for more complete rest and often for more effective collapse. If a patient with curable tuberculosis grows worse while under observation the physician must blame himself and must act quickly.

What is Meant by a Cure. The modern more radical and thorough treatment of tuberculosis has resulted in a different type of cure. The idea that a person who has had the disease must thereafter consider himself a chronic invalid is no longer correct. It is not necessary for him to change his work or his residence or to alter his plans or curb his ambitions. The patients who are listed as cured in this report have in nearly every instance gone back to their former occupations and are leading normal lives. Business men have returned to their offices, factory workers to their benches, medical students to their classes, internships and practices, young women have been advised to marry, and married women to have children. The only restrictions which have been placed upon them have been to avoid strenuous exercise and to lead normal lives, in contradistinction to the abnormal existences which so many of us follow. Follow-up examinations are recommended once each six months. If the tuberculosis does recur, as it will in an occasional case, it is very important that it be found in its early stages. In many instances the return to work is considered as a test of the security of the cure. If a patient who has recovered without phrenicectomy or artificial pneumothorax or thoracoplasty breaks down under conditions of normal living, this recurrence is interpreted merely as an indication for the type of collapse which might have been used originally but which the patient had a good change of avoiding.

The Results. Of the 600 cases 61 or 9.8% had minimal involvement; 218 or 36% had moderately advanced; and 324 or 54% far advanced disease.

These figures indicate what statistics on tuberculosis have always indicated, that the great problem in the control and treatment of the disease is that of early diagnosis. In spite of the fact that this has been preached and emphasized since Robert Koch first demonstrated its importance in the control of tuberculosis, most cases still are first recognized months or years after

the onset, when their chances for recovery are compromised and they have already transmitted the infection to their families and friends. In a series of one hundred consecutive cases at Edward Sanatorium it was found that there was an average interval of four months between the appearance of the first symptoms and the first consultation with a physician. The average interval between the first consultation and the arrival at a diagnosis was ten months. In nearly every instance the date of the diagnosis coincided with that of the first x-ray examination.

Results in the Minimal Cases. Of the 61 minimal cases 59 or 95% are well. There were no deaths from tuberculosis. One patient died of coronary thrombosis four years after recovery and another who transferred to a public institution at the end of four months has become worse and is still ill.

Minimal pulmonary tuberculosis can be cured simply and almost certainly. A period of six months of bed rest followed by six months of a lazy ambulatory existence will nearly always suffice. The use of artificial pneumothorax is safe and can greatly shorten the period of disability. At Edward Sanatorium it is used only when economic considerations require an early return to work. All have made complete recoveries without important complications. In considering pneumothorax for minimal lesions it must be borne in mind that the complications of the treatment are in proportion to the extent of the disease and that in minimal disease they are minimal.

Results in Moderately Advanced Cases. Of 214 moderately advanced cases 177 or 83% are well, 21 or 10% died of tuberculosis, and 4 or 2% died of other disease after recovery from tuberculosis, and 12 or 5% are still sick with tuberculosis.

Of the 214 cases, 173 remained in the Sanatorium for six months or more or were discharged on advice in a shorter period. Only these cases can be said to have had their treatment at the Sanatorium or under its supervision. The results in these 173 cases are shown in the following table.

	No.	%
Well	154	89
Died of tuberculosis	7	4
Died of other diseases	4	2
Sick with tuberculosis	8	5
Total	173	100

Patients with moderately advanced tuberculosis should always recover unless they experience unpreventable and uncontrollable accidents or have such complications as severe enteritis or bronchial tuberculosis which are not amenable to treatment. A phthisiologist should feel himself obligated to explain his failure to cure any case of moderately advanced disease. By definition the patients have sufficient normal lung to support life. By one means or another, if they will not recover more simply, successful collapse of the diseased areas should be accomplished and healing secured.

Of the 7 patients who died, 3 had bronchial or tracheal obstruction, 2 developed miliary tuberculosis, 1 woman fifty-six years old died several months following a thoracoplasty, and one patient with severe pneumonoconiosis died of extension of tuberculosis four years after apparent arrest of his original disease.

Of the 8 who are still ill, 5 have had recurrences after passing from under our care; one with a basal cavity is to have a thoracoplasty, one has had a minimal extension to the opposite lung and another with a bad family history and no apparent resistance still has a positive sputum in spite of adequate bilateral collapse.

The Results in Far Advanced Tuberculosis. Whereas in minimal tuberculosis the chances for recovery approach 100%, and in moderately advanced disease they are well over 90%, in far advanced phthisis the outlook is much less favorable. In this group one encounters in the disease the terrible and final potentialities. Many patients are moribund when they seek treatment. Many others have such large cavities, such extensive involvement and such severe complications that at a glance one can say that recovery is impossible. In many, a low vital capacity precludes attempts at collapse and in others there is not sufficient normal lung to support life were the diseased areas put out of function. On the other hand, in this group many have so favorable a prognosis that one cannot consider a diagnosis of far advanced tuberculosis as connoting always a gloomy outlook.

Of the 323 far advanced cases, 134 or 41% are well; 154 or 48% died of tuberculosis; 4 or 1% died of other diseases, and 31 or 10% are still sick with tuberculosis.

Of the 154 who died, 62 were classed as hopeless on admission. Thirty-four died within a

month of entering the Sanatorium. Ninety-two had too much disease to permit the use of any collapse measures.

Of the 323 far advanced cases, 221 stayed under our care for six months or more or were discharged on advice after a shorter sojourn. The results in these cases are shown in the following table:

	No.	%
Well	107	48
Died of tuberculosis	101	46
Died of other diseases	4	2
Sick with tuberculosis	9	4
Total	221	100

Of the 101 cases who died of tuberculosis, 58 or 59% were classed as hopeless at the time of admission. Thirty-four died within a month of entering the Sanatorium.

Combined Results. The combined results in the whole group of 600 cases are shown in the following table:

	No.	%
Well	370	62
Died of tuberculosis	175	29
Died of other diseases	9	2
Sick with tuberculosis	44	7
Unknown	2	0
Total	600	100

Of the 449 cases who remained under our care for six months or more or who were discharged dead or on advice before this time, the results are as follows:

	No.	%
Well	314	70
Died of tuberculosis	108	24
Died of other diseases	9	2
Sick with tuberculosis	17	4
Unknown	1	0
Total	449	100

COMPARISON OF MODERN RESULTS WITH THOSE OBTAINED BEFORE ERA OF EXTENSIVE USE OF COLLAPSE THERAPY

In 1938 Drolet published statistics showing that the recent increase in the use of collapse therapy had not altered the general death rate from pulmonary tuberculosis. This article was hailed by many of the older and more conservative phthisiologists as a vindication of their skepticism, and throughout the profession cast some doubt upon the value of the new measures. While no intelligent phthisiologist doubts their value and although many statistical studies have shown that the results in cases treated by collapse were far superior to those in cases untreated, Decker's publication again shifted the burden of proof upon those advocating the newer procedures.

In 1931 a survey was made to determine the current condition of patients resident in Edward Sanatorium in 1925. During this year patients were treated by partial rest, collapse measures were used on only 10 of the 209 patients. The results of these 209 patients are shown in the following table:

	No.	%
Well	55	27
Died	108	51
Sick with tuberculosis	13	6
Unknown	33	16
Total	209	100

A comparison of the 1925 and the 1937 results is shown in the following tables. The results in the 1925 cases are listed as of 1931.

MINIMAL CASES

	1925 %	1932-1937 %
Well	59	96
Dead	9	2.5
Sick with tuberculosis	9	2.5
Unknown	23	0

MODERATELY ADVANCED CASES

	1925 %	1932-1937 %
Well	45	83
Dead	31	12
Sick with tuberculosis	0	5
Unknown	24	0

FAR ADVANCED CASES

	1925 %	1932-1937 %
Well	15	41
Dead	65	49
Sick with tuberculosis	8	10
Unknown	12	0

An interpretation of the comparative results as evidence in favor of the more radical treatment of tuberculosis might be criticized on the grounds that in the more recent group the follow up has been more complete. It might be argued that the earlier figures would be much better had the 1931 condition of the unfollowed cases been known. That this criticism is not warranted is shown by a comparison of the percentage in the two groups who are known to have died. Nine per cent. of the minimal cases in the 1925 group were dead in 1931 as compared with 2.5% in the 1932-1937 group who were dead in 1940. Thirty-one per cent. of the moderately advanced cases of the 1925 group were dead in 1931 as compared with 12% of the 1932-1937 group. Sixty-five per cent. of the far advanced cases of the 1925 group were dead as compared with the 48% of the 1932-1937 group.

COLLAPSE THERAPY

Three hundred and sixty-four or 60% of the 600 cases had some form of collapse therapy. One hundred and five or 17% were considered to have too little disease to warrant collapse; ninety-two or 15% had too much disease; and 39 stayed in the Sanatorium too short a time for any decision to be made.

The percentage of cases treated by collapse therapy varied somewhat from year to year. The percentages for each year are shown in the following table:

	No. of cases	With Collapse	%
1932	122	58	48
1933	81	46	57
1934	83	53	64
1935	80	50	63
1936	107	78	73
1937	127	79	62

The results in those who had collapse therapy, those who had too little disease and those who had too much disease are shown in the following table:

With Collapse Therapy

Well	Dead	Sick
261	78	25

Too Little Disease for Collapse Therapy

Well	Dead	Sick
99	6	0

Too Much Disease for Collapse Therapy

Well	Dead	Sick
2	84	6

The number of times each of the procedures was used is shown in the following table:

Phrenic Nerve Operations	170
Artificial Pneumothorax	253
Internal Pneumolysis	27
Paraffin Pack	26
Thoracoplasty	66
Extrapleural Pneumothorax	4

At the present time phrenicectomy is employed less frequently, while improvements in the technique of internal pneumolysis have raised the incidence of this operation; and the development of extrapleural pneumothorax has relegated paraffin pack to a very minor position. In the technique of and indications for the different procedures there is still an active evolution so that one's practice today differs materially from that of last year and the years before.

Results in Collapse Therapy. In a paper which aims merely to give a general picture of the results of the modern treatment of tuberculosis, a detailed analysis of the various collapse measures is superfluous. These will be the subjects of supplementary reports. At the present time it seems advisable to limit the discussion to a simple statement of the statistics.

PHRENIC NERVE OPERATIONS:

During the years covered by this report, phrenicectomy and phrenic nerve block were used for the variety of purposes. In many instances they were employed as palliative or preparatory operations, or to terminate a pneumothorax, or as rather hopeless gestures in cases in which no other treatment was feasible. Even in cases in which it was hoped that they would be sufficient, they were always considered as trial measures and were persisted in only as long as improvement was progressive. During the earlier years the permanent operation was the rule; today, in order to preserve vital capacity in case apical thoracoplasty or centralateral pneumothorax becomes necessary, the temporary operation is usually performed. The operation was not used in minimal cases.

Of the 170 patients upon whom it was performed, 66 recovered without further interference. There were no operative or late deaths and no complications.

ARTIFICIAL PNEUMOTHORAX

Artificial pneumothorax was used on 253 patients. In 167 instances the collapse was satisfactory and the sputum rendered negative. In some cases a successful collapse of the better lung was obtained to prepare it for eventual thoracoplasty on the worse side. Often in acute cases and pneumonic cases, a rapidly progressing and excavating process was controlled and the patient rendered fit for some surgical collapse. The results in the 167 cases in which the collapse was effective are shown in the following table:

	No.	%
Well	158	95
Dead	4	2
Sick	5	3
Total	167	100

The Complications of Artificial Pneumothorax. The important complications of artificial pneumothorax are air embolism, spontaneous tension pneumothorax, tuberculous empyema, and secondarily infected empyema. Air embolism is so rare as not to be important, and treatment of the others has recently become so simple and successful that they are now little to be dreaded. Their incidence is in proportion to the extent and seriousness of the tuberculosis. In this series there were no important complications in

minimal cases and no deaths attributable to them in the moderately advanced cases.

Today tuberculous empyema can usually be controlled by multiple aspirations, irrigations and instillations of cod liver oil. Thoracoplasty is rarely required. Secondarily infected empyema, which used always to call for drainage and thoracoplasty, now is almost regularly amenable to multiple aspirations and irrigation, and spontaneous pneumothorax can be simply controlled by leaving a fine trochar connected with a water bottle in position for twelve to twenty-four hours. During the past three years there have been no deaths attributable to artificial pneumothorax.

During the period covered by this report there were eight deaths from the complications of artificial pneumothorax. These are listed in the following table:

Spontaneous pneumothorax	4
Tuberculous empyema	0
Secondarily infected empyema	3
Air embolism	1
Total	8

All of these deaths occurred in extremely far advanced cases. The three from secondarily infected empyema took place before aspiration and irrigation had been proved effective and all had such extensive disease in the opposite lung that the then current treatment by drainage and thoracoplasty could not be considered.

INTRAPLEURAL PNEUMOLYSIS

Intrapleural pneumolysis was used so infrequently during the years covered by this report that a true picture of it is not afforded. The instruments for performing it have been so improved and skill in using them so increased that today it is being employed more and more frequently on more and more difficult cases and with increasingly better results. Designed simply to make effective an ineffective pneumothorax, its success can be judged only on the basis of its so improving the collapse that the sputum is rendered negative.

The results are shown in the following table:

Successful	16
Unsuccessful	11
Mortality	0
Total	27

PARAFFIN PACK

Edward Sanatorium is one of the few clinics in the United States in which paraffin pack has been regularly employed in the treatment of selected cases. Most American surgeons discarded it without a trial on the basis that an operation which included the use of so large an amount of foreign material was unsurgical and could not be valuable. We first employed it in a case in which all other methods of collapse were impossible or strongly contraindicated. Success in this instance lead to continuation of its use, and throughout the period covered by this report it was a regular part of the armentarium. It was then the only means of securing a strictly local collapse of a diseased lung area without seriously impairing the vital capacity. It was used in cases in which low vital capacity, age, or poor general condition contraindicated thoracoplasty; as an alternative to thoracoplasty where this operation seemed more destructive than the lesion warranted; and as a preliminary to thoracoplasty when the size of the cavity suggested that thoracoplasty alone would not be effective.

All in all, the experience was favorable. The complications which had been anticipated either did not develop or were found not to be serious. In the 27 cases there were no operative deaths. In no instance was there infection of the wound or about the pack. In no case did the pack slip out of position. The only complication encountered was perforation of the paraffin into the lung. When this occurred, it was always many months after the operation and always in cases with large cavities. In no case was this, of itself, a serious incident. Fever or the stormy symptoms of acute infection did not develop. The incident was considered as an indication for removing the paraffin and performing a thoracoplasty and this was done successfully and uneventfully in all instances save one. In one patient with a large cavity, extensive disease in the opposite lung, and severe asthma, perforation occurred eight months after the operation. The patient was so short of breath from tuberculosis and asthma that Thoracoplasty could not be performed. Death followed simple removal of the pack.

The results in the 26 cases are shown in the

following table:

Pack Alone

	No.	%
Well	11	73.3
Operative death	0	00.0
Died later of tuberculosis	2	13.3
Died later of other diseases	1	6.7
Sick with tuberculosis	1	6.7
Total	15	100.0

Pack Followed by Thoracoplasty

	No.	%
Well	8	73
Operative death	0	0
Died later of tuberculosis	2	18
Died later of other diseases	1	9
Sick with tuberculosis	0	0
Total	11	100

Considering as favorable results those patients whose sputum was rendered negative but who died later of other diseases, the operation was successful and has continued successful in approximately 80% of cases.

Today it is rarely used. Extrapleural pneumothorax appears to have the same advantages and avoids the drawbacks incident to the foreign body. The Semb apicolysis appears to have made the pack unnecessary as an operation preliminary to thoracoplasty.

THORACOPLASTY

Over the period covered by this report, thoracoplasty, although an old operation, underwent an important evolution. The simple Wilma-Sauerbruch columnar resection was found in too many instances to give an ineffective collapse and gradually the early demand of Brauer, that the collapse from thoracoplasty must be as complete as that afforded by a good pneumothorax, came to be appreciated and acted upon. The standard operation now includes removal of the entirety of the upper three ribs and extremely long segments of the others, avulsion of the neck of the ribs to the spinal articulations, resection of the transverse processes and extrafacial mobilization of the apex of the lung. Treatment of the peritosteum of the upper ribs with Zenker's solution or some other fixative to prevent or delay regeneration is more regularly employed. These changes have made the operation more difficult to perform, but have proved their value by increasing the percentage of cures from 40 to 80.

To decrease the shock incident to the more radical resection we have revived and developed a muscle splitting approach to the ribs which we first described in 1938. Through these separate and short non-traumatizing incisions, it is now possible to remove adequate segments of the ribs and secure as good a collapse as can be obtained by the parascapular and paravertebral transecting incisions.

Thoracoplasties have been performed upon 66 patients. Five of these were done at other institutions by other surgeons and sixty-one at the Sanatorium. The results in these cases are shown in the following table:

Operated Upon Elsewhere

	No.	%
Well	3	60
Operative death	2	40
Total	5	100

Operated Upon at Sanatorium

	No.	%
Well	41	67
Operative death	5	8
Died later of tuberculosis	10	16
Died later of other diseases	1	1
Sick with tuberculosis	5	8
Total	61	100

DISCUSSION OF THE THREE PRECEDING ARTICLES

Dr. M. Pollak, Peoria: Dr. Head's paper is truly important because it is the first time that we have had statistics on end results of collapse therapy compared with the results of "rest" treatment alone. He mentioned a very important thing when he said that no case of minimal tuberculosis should be permitted to die. That is well to remember. We experience, however, difficulties at times when we suggest collapse therapy to our patients, because at times the family physician is not aware of the value of this therapy.

Dr. Bosworth's paper fits in with that of Dr. Head. He points out the importance of discovering the minimal case. We find it often that when a patient goes to a doctor with some vague symptoms like malaise, fatigue, low grade fever, the physician will think of tuberculosis, and such cases are often referred to our clinic. On the other hand, if the patient with tuberculosis presents some findings which can be interpreted as caused by pneumonia, head cold or bronchitis etc., sputum examination, which could clear the diagnosis, is often forgotten and neglected. It is important to stress even today that in every instance where the patient expectorates, no matter what the diagnosis might be, the patient's sputum should be thoroughly examined. If we follow this rule, very likely the number of far advanced cases will become much smaller and the patients will get proper therapy earlier.

Dr. Meixner presented a very important subject. There are, however, a number of things that should be challenged in his presentation with all due respect to an opposite point of view.

Interruption of pregnancy today is an easy opera-

tion, but it still remains a serious matter. Today, with collapse therapy, we should not often subject a woman to such interruption. With collapse therapy at our disposal, I feel that only the far advanced cases, and these too only in rare instances, present an indication for a therapeutic abortion. It is our practice with pneumothorax cases to crush the phrenic nerve just before confinement, thereby preventing the sudden expansion of the lung after delivery. I should like to call attention here to the report of Drs. Jennings and Mariette who have worked up a large series of cases of this type, and came to the conclusion that a therapeutic abortion should be done only very seldom if ever.

Finally, I should like to ask Dr. Head if he has any figures on sputum conversion?

Dr. Jerome Head, Chicago (in closing): I only want to answer Dr. Pollak's question in regard to sputum conversion. There are no special figures available on that.

I should also like to say that in going over 100 cases at the Sanitarium in an attempt to find out the process by which the physician arrived at a diagnosis, we found that between the first symptom and the time of going to the doctor there was an average period of four months, and between going to the doctor and getting a diagnosis of tuberculosis there was an average interval of ten months.

A REPORT OF TWO CASES OF TRAUMATIC RUPTURE OF THE TENDON ACHILLES

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These two cases are presented, first because traumatic rupture of the tendon Achilles is a relatively infrequent accident, and second, because the treatment instituted resulted in perfect function. Both cases were seen within six weeks of one another; both were students at the University of Illinois; and both received the injury while engaged in athletics, one while playing basket ball, and the other while playing volley ball.

L. W., age 24, on January 19, 1940 while in a crouched position ready to throw a basket ball towards the basket and with his left tendon Achilles on a stretch, was stepped upon just above the left heel rather violently by a fellow player. The patient immediately felt a severe pain in the region of his heel and was forced to leave the game. He noticed on walking that there was marked weakness in his ability to propel himself forward with his left foot. There was also considerable pain on walking. About three hours after the accident he was seen at McKinley Memorial Hospital at the University of Illinois. At that time he was complaining of a continuation of the pain that he had experienced at the time of the accident, and definite weakness in the left leg in forward propulsion.

Examination revealed a healthy, muscular male. The region of the heel and ankle was extremely tender and there was some swelling on the posterior aspect of the left leg just above the heel, with a definite inward deformity suggesting an absence of the tendon Achilles. There was no sensation of a taut tendon Achilles when there was plantar flexion of the left foot. Routine physical examination was otherwise negative. There was no history of a previous injury to the part, and his other past history was irrelevant.

Treatment: The whole left extremity was placed in a splint for immobolization and at the end of fifteen hours, there was very little change in the previous clinical findings except perhaps a little less pain on motion of the parts. It was decided that surgical intervention should be resorted to. The patient was transferred to Burnham City Hospital and under ethylene-oxygen anesthesia, a vertical incision about three inches long was made just to the side of the normal location of the tendon Achilles. On reflecting the skin, a moderate size hematoma was found as well as a tearing of the tendon sheath. The tendon itself was so ruptured that both the proximal and distal ends looked like a frayed fringe, and the proximal end had retracted over two inches. With the left foot in extreme plantar extension three fine silk matress sutures were placed in the unfrayed portions of the tendon and the ends brought together. The frayed ends were put in apposition to one another and two or three silk ties were used to hold the frayed ends in contact with one another. The rupture in the tendon sheath was carefully repaired and the skin incision sutured with a dermal suture. A plaster cast from the tips of the toes to above the knee was applied, with the foot in slight plantar extension in order to relieve any undue tension on the sutured tendon.

The patient left the hospital on the third day on crutches and on the seventh post operative day a window was cut in the region of the incision, the dermal stitches removed, and the wound found to be healing by first intention. On the tenth post-operative day, the upper portion of the cast was removed so that flexion of the knee was possible. On the twenty-eighth post operative day the cast was removed entirely and the ankle partially immobilized with a knit bandage. At that time it was found that the ankle joint was somewhat stiff and the patient was urged to begin some weight bearing. The tendon had apparently healed very satisfactorily. One week later the bandage was removed and the patient urged to use the foot as much as possible, but to use it with care. Two months after the injury the patient was walking quite normally and there was almost no deformity, although plantar flexion was slightly impaired. Nine months after the accident the patient

was seen and there was no abnormality of function in any way.

The second case was that of D. T., age 28, who suffered a similar accident to his left ankle while playing volley ball. He was not seen until eighteen hours after the injury. In describing the accident he is not at all positive that he was injured by a fellow player, although he thinks it likely. It is clearly possible that the rupture of the tendon Achilles was spontaneous during play.

The physical signs were the same as in the first case, and immediate operation was performed. The same type of pathology was found, and the same surgical procedure instituted. The only variation in the treatment was that the plaster cast, when originally applied, did not include the knee as it was felt that this added immobilization was not necessary and locomotion on crutches was much easier.

The cast was removed on the twenty-eighth post operative day and at the end of two months the patient was walking on the extremity. Three and one-half months after the injury the patient was walking normally and there was practically no impaired function. This patient was a little more apprehensive about the use of his foot than the first patient, and as a result his plantar flexion had not quite returned to normal, although there was no reason to believe that he would not have perfect function with continued use of the extremity.

A review of the literature on rupture of the tendon Achilles shows the following: first, Zollinger did not observe a rupture of the tendon Achilles in 50,000 accident cases. Second, in 1929 Quenn and Storanovitch collected 68 cases of this injury from the literature. Third, in 1935 Malbec reported that after careful study of the world's literature, only 86 cases had been reported. Fourth, in 1936 du Coteau stated that partial rupture of the tendon Achilles was fairly common but that he had never seen a complete rupture.

I believe that surgery is indicated in all cases. A brief resume of the literature shows the following: First, most cases are not seen by the surgeon for many hours to several weeks after the accident. Second, practically all surgeons are of the opinion that all of the cases should be operated upon. Third, those treated without surgery will gradually heal, but convalescence is very long, deformity much more likely, and with employers liability cases malingering more common. Fourth, none of the literature described the fraying of the tendon as observed in both of the cases above reported.

RADIUM TREATMENT OF PERSISTENT NOSE BLEEDING

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ALBION

Nasal hemorrhage has caused much anxiety on the part of any practitioner of medicine with any number of years of experience. When the doctor is the patient, he naturally has a greater interest in the condition than ever before. The writer, 60 years of age, and a practitioner of medicine for the past 37 years, has had nose bleed for many years. There is a heredofamilial tendency, as my father and one sister likewise had this same trouble. My father, of German descent, died at the age of 67 of apoplexy, and had had nasal hemorrhages for many years. My sister, like myself, has two grown children, and none of the four has had epistaxis.

On September 14, 1940, I was found unconscious on the floor of my office following a severe nasal hemorrhage. I have no idea how long I had been there when help came. An ambulance was called and I was taken to my home and placed in bed. Within a short time I resumed consciousness, and suffered intensely from general muscular cramps. An opiate was required to give relief from this pain, and 5 cc of coagulose was also administered. Soon thereafter I was given moccasin venom (Lederle) in 1 cc dosage. This was given hypodermically every third day and the dosage varied with the resulting reactions. Although remaining in bed, I continued to have from one to five nasal hemorrhages daily.

On September 30 I was removed to the Welborn-Walker Hospital in Evansville, Indiana where complete physical and laboratory examinations were made with negative findings. Blood chemistry, blood counts and smears did not show evidence of any blood dyscrasias or any other disease, and I was permitted to return to my home where the snake venom was given as before.

On the morning of November 20, 1940 I had another severe hemorrhage which all but cost me my life. The profuse bleeding was principally from the left nostril, and again I was found in almost complete collapse. Physicians were called, and decided to remove me promptly to the hospital. While preparations for the trip were being made I vomited profusely — no

blood, but food taken the previous day. This was followed by the usual severe muscular cramping, and opiates were again prescribed. There was no constipation or nausea, and although the opiate relieved the cramping, there was no narcosis following its administration.

At the hospital in Evansville an immediate blood transfusion was deemed advisable, but with much difficulty, while preparing for the transfusion, an intravenous saline solution was given. The veins were markedly collapsed, making it extremely difficult to penetrate one for the necessary transfusions. One pint of blood was given intravenously following the administration of the saline solution. The immediate effect of the transfusion was all that could be desired, and the weakness and prostration were almost completely overcome. Complete rest in bed followed by a week of a series of special examinations resulted in all reports negative. Friable blood vessels were found on the mucosa of the nasal septum which would bleed readily on the slightest provocation. These had been treated locally in the past by various specialists through the use of chemicals and electric cautery, with little more than temporary improvement.

On November 27, 1940, I called Dr. Bernard Ravdin, Eye, Ear, Nose and Throat specialist of Evansville, Indiana, and suggested the use of radium to be applied to the nasal septum in contact with these superficial blood vessels. We conferred with Dr. Charles Seitz, the Radiologist, who was willing to use radium as suggested, to begin the following day.

At intervals of one week, radium has been applied in the nose since that time with the most satisfying results. The previously eroded areas on the septum have been completely obliterated, and there has been complete relief from hemorrhage.

No evidence of blood dyscrasia has been found in my case — the findings are only those usually found in secondary anemias. It seems quite probable that through the use of radium, I can expect a complete cure.

Tuberculosis of the eye is just as much tuberculosis as tubercle of the lung, and just as little amenable to drops and lotions as pulmonary tubercle is to sprays and bronchial injections. H. M. Traquir, Ann'l Rep. Tuber. Soc. of Scotland, 1940.

A NEW SYNDROME OF CORPUS LUTEIN DEFICIENCY

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The early 1930's were rich in experimentation with ovarian as well as other glandular substances. Since then medical literature has been filled with articles on the various female hormones and their influence on the menstrual cycle, their bearing on pregnancy, and their relationship to menapause. But very little has been said relative to hormone therapeusis for that enormous group of women who demonstrate no definite organic disease, but who struggle miserably through most of their lives without ever enjoying a feeling of well-being until they have passed their climacteric periods. It is in their behalf this paper is inspired, in the hope that the future may bring them some escape from their many disagreeable symptoms.

In the latter part of the nineteenth century it was demonstrated that the ovaries secreted some substance that was picked up by the blood stream, which influenced normal puberty development phenomena, and which helped to "preserve the integrity of the genital apparatus." Within the past ten years, particularly in 1931 and 1932, much was learned concerning the influence of ovarian and pituitary hormones on sexual development, menstrual cycle function, pregnancy, embryological development, lactation, and menopause. But there has been no reported work of note on correlation of ovarian function with the physiology of the nervous systems of women between the ages of puberty and menopause.

Ovarian hypofunction in castrates or at menopause is easily diagnosed, and scientifically treated with estrogenic substances. Before menopause, when marked menstrual disorder is present, a similar line of treatment is usually effective. The difficulties of patients with deficient follicular hormone are rather well understood, and their management is producing on the whole encouraging results. But the young individual with normal or nearly normal menstrual cycle, in whom the consideration of hormone deficiency is usually overlooked, is she who presents a peculiar symptom complex, mostly neurological in character, and who is generally classified as being

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Read before the Staff Meeting, Ravenswood Hospital, Chicago, May 15, 1941.

neurasthenic, psychopathic, imaginative, or just lazy. She is the chief topic of this discussion.

Polycystic disease of the ovaries, the pathogenesis of which is not well explained, is usually bilateral. Pathologically, the ovaries contain many cysts of variable size, and are larger than normal, their dimensions and shapes being dependent on the number and sizes of the cysts present. The liquor of the cysts is rich in folliculin, and the patient does not, therefore, present a hypoestrogenic symptomatology. The remarkable fact which has not been stressed as a possible cause of ovarian dysfunction is the conspicuous lack of luteinization. It is probably this factor which gives rise to the characteristic chain of symptoms which is usually undiagnosed in the woman with polycystic ovaritis.

The most common complaints due to the hormonal unbalance produced by this condition are those of being tired, regardless of effort or rest, nervous, irritable, and depressed. Emotional instability may be such that weeping is frequent on slight provocation. Leukorrhea is usually present. There may be partial or total frigidity. Irregular menses, dysmenorrhea, ovulation pains, premenstrual headaches are frequently found. Other multitudinous functional disturbances often encountered include tachycardia and palpitation, dyspnea, elevated blood pressure, dermographia, blotchy blushing over the chest, neck, and face, spastic colitis, insomnia, shifting aches and pains, and vague visual disturbances. This dysfunction probably ranks first as a cause of relative sterility; and in the event of pregnancy may result in early abortion. Associated with prolonged corpus luteum deficiency is also often found a fibro-cystic degeneration of the breasts. Fibroid tumors of the uterus, on the other hand, although usually associated with endocrine unbalance, are not commonly encountered, and probably have no connection with defective luteinization.

Years ago progesterone, the only well known corpus luteum hormone, was presented by careful laboratory animal experimentation as being an important factor in menstrual irregularities, endocrine sterility, dysmenorrhea, threatened and habitual abortion, regulation of the vasoconstrictor mechanism of the vascular system, and growth and proliferation of the alveolae of the breasts. The theory is not new that the characteristic colicky pains of dysmenorrhea are due to excessive folliculin stimulus to uterine contractions with an insufficient amount of inhibiting lutein. An excess of estrin over corpus luteum in the blood stream of guinea pigs has been observed to inhibit conception, and in cases of pregnancy to cause early abortion by producing hypermuscular activity of the uterus. Yet the complex symptomatology of deficient luteinization, as is so frequently found in the woman with polycystic ovaries, has not been described as a distinct clinical entity with a specific therapy.

Early in the climacteric period, before menstrual changes have been evidenced, gradual inhibition of ovarian function may produce a symptomatic picture of insufficient luteinization very similar to the above. And in this instance also there is a favorable response shown to corpus luteum treatment.

The procedure of choice for prompt relief of those patients suffering from ovarian hormone unbalance, when the symptoms evidenced are reminiscent of lutein failure, is the intramuscular administration of corpus luteum extract, as a simple expedient of supplying a deficiency. In addition to relieving the symptom complex, there is an apparent temporary stimulation of luteinization, as the improvement usually lasts for from one to three years. Future treatment, however, should be anticipated. Whether or not the use of prolan B, the luteinizing factor of anterior pituitary extract, would be of value as a corrective adjunct is not known.

SUMMARY

1. There has been very little progress in the last ten years in the study of ovarian hormonal function and deficiency therapeusis.

2. A definite symptomatology accredited to insufficient luteinization in the ovaries has been described, and a treatment recommended.

3. Polycystic ovaritis and inhibition of ovarian function preceding menopause are thought to be the causative factors.

4. It is hoped that prolan B may prove a valuable treatment adjunct.

5. It should be remembered that undue fatigue, so-called nervousness, irritableness, and mild depression, especially with the presence of leukorrhea, are associated with improper function of the ovaries, and in the absence of any demonstrable pathology should be so considered and treated.

6. Apparent sterility in women presenting the decribed symptom complex can be treated with a high percentage of success.

7. One of the etiological factors to be considered in early threatened or habitual abortion is lack of proper corpus luteum function.

8. Lutein deficiency may cause dysmenorrhea.

9. Fibro-cystic degeneration of the breast glands has been observed to be associated with prolonged estrin-lutein unbalance.

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THE SOFT-SOAP HAZARD

Beware of the days when all goes well; beware of the word of praise and the pat on the back, for all such things are fickle. But when Old Man Adversity knocks at your door, do not try to holler loud enough to drown the sound of his knocking. Ask the old croaker to come in and justify his visit. Be candid with him, strip him of his cloak of mystery, and find the purpose of his visit. From him you may learn much; but he is a peculiar sort of fellow in that the more you learn from him the less often he knocks at your door and the happier are your days.—*Journal of the Medical Society of New Jersey.*

THE OPERATIVE TREATMENT OF CARCINOMA OF THE OESOPHAGUS

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The oesophagus is one of the last seats of carcinoma which has begun to yield to radical surgical treatment. The two principal reasons for this late response have been the slow development of intrathoracic surgery in general and the great difficulty of performance of suture anastomosis of the oesophagus.

It ranks high among the organs that may be the seat of primary carcinoma. Dormans in a study of the frequency of cancer in general, investigated 124,872 autopsies of patients over 20 years of age. He found 23,139 cases of malignancy or 17.7%. Of these 1,679 cases or 1.35% were of the oesophagus, i.e. one patient in every 74 died of carcinoma of the oesophagus. Only the stomach, lungs, and rectum were more frequent seats of the disease.

Hunnerman and Eberhart in an analysis of 182 cases treated in 1930 to 1936 in the University Clinics in Cologne and in Grashey's private clinic found that 178 were in males and only 4 in females which is one of the greatest known differences for malignancy situated in an organ alike in both sexes. However when carcinoma is situated in the uppermost portion of the oesophagus, it is usually in women. In the great majority of cases the lesion is situated within the thorax, beneath the level of the arch of the aorta. In Hunnerman and Eberhart's cases, 10% were in the cervical portion, 53% in the vicinity of the tracheal bifurcation and 37% in the lower thoracic portion.

Carcinoma of the oesophagus is nearly always of the squamous cell variety and tends to invade the adjacent tissues and to metastasize by way of the regional lymph channels and eventually by the blood stream. Spread by direct extension to the adjacent mediastinum, pleura or lung is common in long standing cases when the tumor is situated within the thorax. The regional lymph nodes which are most often involved are the cervical in case the tumor site is in the neck, the tracheal, parabronchial and posterior mediastinal when it is about the level of the tracheal bifurcation and those of the lesser curvature of the stomach when it is situated in the lower

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thoracic region.

It should be possible to make the diagnosis of carcinoma of the oesophagus at perhaps the earliest date and with the greatest ease and certainty of all the internal carcinomas. Difficulty in swallowing appears relatively early and is steadily progressive. Regurgitation of food, and loss in weight and strength follow. Pain in the back or lower oesophageal region is usually a later symptom and is often the result of extension to surrounding parts. Roentgenography nearly always reveals the obstruction. It is practically always possible to locate the lesion by oesophogascopy noting the constriction and gross appearance and to confirm the diagnosis by the performance of biopsy and microscopic examination.

The treatment of oesphageal carcinoma until recently has been practically entirely by palliative measures involving dilatation, gastrostromy and irradiation. X-rays and radium have resulted in cure in almost no cases and the average period of survival after treatment is not very great, averaging about 9 months. Moreover while the growth may be somewhat retarded and the pain and obstructive symptoms lessened, there is often important damage to radio-sensitive tissues and organs in case of heavy irradiation. Coutard's fractional dosage of 3,500 to 4,000 r is the most satisfactory one. Proske has reported 21 cases of regional metastatic carcinoma of the thoracic oesophagus developing after Coutard roentgentherapy of carcinoma of the pharynx, larynx and first portion of oesophagus with marked control or disappearance of the primary lesion.

Operations introduced for the radical cure of carcinoma of the oesophagus have varied according to the location of the tumor. Operation for carcinoma of the cervical portion was first successfully performed by Czerny in 1877. However since then it has not often been performed and the results have rarely been satisfactory. Associated laryngectomy and cervical lymphadenectomy have also been necessary in a considerable percentage of the patients and the primary mortality has been high. Gluck made a collective report of 116 cases six of which were five year cures. Treatment in recent years has been more by irradiation than by operation.

The technique of operations for resection of carcinoma of the intrathoracic portion of the oesophagus was worked out principally by Sauerbruch but he has apparently not published a successful case. They were performed principally through a left seventh intercostal transpleural incision. In case of tumors at or near the cardia, the stomach was brought up into the chest, the tumor resected and an end-to-end anastomosis made. When situated above these levels, the tumor and oesophagus were liberated, the oesophagus divided below, its lower end infolded, the upper portion brought out through an incision in the neck and the tumor then cut off leaving an oesophageal fistula. Up to 1913 thirty-four cases had been operated on under differential (mainly negative) pressure, 17 by Sauerbruch and 17 by other surgeons with a 100% mortality. In 1913 Torek operated on the first case successfully bringing the proximal end of the oesophagus with the tumor-bearing portion out through the neck and the patient lived for 13 years, dying eventually of pneumonia. A successful case operated on by this method was reported by each of the following: Eggers in 1926, Torek in 1930, King, and Edwards and Lee in 1936 and Brunn in 1937.

Successful resection of the lower end of the oesophagus for carcinoma with intrathoracic displacement of proximal portion of stomach and oesophagal gastrostomy was first reported by Ohsawa of Japan in 1934. The operative approach was by way of a thoraco-laparotomy, the incision being in the midline of the epigastrium and along the left seventh intercostal space. The diaphragm was divided down to the oesophagus previous to resection and anastomosis. In 1934 he reported eight cases of oesophagal gastrostomy and two cases of oesophageal jejunostomy which survived the immediate operation but no follow-up was given.

The first successful resection with oesophago-gastrostomy through a left transthoracic approach was reported by Marshall in June 1938 and the second case by Adams and myself in August 1938. Since then Marshall has had other successful cases. Garlock has reported the largest number of resections in recent years. Of 10 cases operated on the tumor was removed in 7. One case was operated on by oesophago-gastrostomy with survival and 6 cases by division of the oesophagus below the tumor and cervical oesophagostomy with 5 survivals. In addition he has performed three transthoracic resections for car-

cinoma of the cardiac end of the stomach followed by oesophago-gastrostomy with one survival.

Ten cases have been operated on in this clinic by Doctors Adams, Prohaska and myself in an endeavor to perform radical resection. In two cases the tumor was located in the cervical region and had so extensively invaded surrounding tissues that resection was impossible. Of the eight cases in which the tumor was situated within the thorax resection was carried out in six through a left 7th rib thoracotomy. In the other two cases there was regional extention which made resection impossible. A blood transfusion varying from 600 to 900 c.c. was given during the operation in each case resected. The anaesthetic was ethylene administered with a positive pressure of about 6 mm. Hg. In two cases of carcinoma of the lower oesophagus, resection was followed by oesophago-gastrostomy. One patient survived and is free from signs of recurrence two years and four months after operation. The other died three days after operation. Of the four cases in which the tumor was situated above this level, division of the oesophagus and removal of the tumor through the neck was performed. Two patients survived the operation and two died in the early postoperative period. This gives a fifty per cent. mortality for the six cases that were resected.* Brief abstracts of the histories follow.

ESOPHAGOL GASTROSTOMIES

Case 1, previously reported by Adams and myself. A female, aged 53 years had a carcinoma of the terminal oesophagus producing symptoms for 4 months. The operation was performed by a left thoracotomy with resection of the seventh rib. The tumor-bearing lower oesophagus was freed from surrounding tissues, the diaphragm was opened and enlarged lymph nodes found along the upper portion of the lower curvature. These were freed and the gastric artery divided and tied off. The stomach was then pulled up into the thorax where the cardia and involved lymph nodes were resected and the end closed with two rows of sutures. The fundus of the stomach was then anastomosed to the end of the oesophagus above the tumor by an inner layer of through and through and an outer layer of Lembert interrupted sutures. A catheter gastrostomy was performed, the diaphragm closed about the stomach, a catheter introduced into the chest through an intercostal space, the chest wound closed tightly and the air pumped out of the pleural cavity. The patient made an uninterrupted recovery and is now well and free from recurrence two years and four months after operation.

Case 2. Male, aged 60 years, had a carcinoma of the oesophagus 3 inches above the cardiac end and producing symptoms for seven months. The patient was operated on by a technic similar to that described in the previous case. There was extensive infiltration of the surrounding mediastinal structures by the tumor and the right pleural cavity was opened in freeing it. The diaphragm was opened, the gastro-hepatic omentum was divided and the gastric artery divided and ligated. This permitted the stomach and spleen to be pulled up within the thorax. The oesophagus was doubly ligated just above the cardia and the distal end infolded. The proximal part of fundus was then anastomosed to the oesophagus above the tumor about two inches below the aortic arch, using two rows of sutures. For the relief of tension on the anastomosis the stomach was anchored high by additional sutures to surrounding mediastinal structures. There was great cardio-respiratory embarrassment calling for an intracardiac adrenalin injection during the operation and despite the simultaneous blood transfusion there was marked shock. The patient rallied following operation but died three days later of sero-hemorrhagic exudate in the left chest and beginning pneumonia. At autopsy the anastomosis between oesophagus and stomach was found to be intact.

If oesophago-gastrostomy is contemplated, a preliminary gastrostomy is contra-indicated as it interferes with elevation of the stomach.

THORACO-CERVICAL RESECTION WITH OESOPHAGOSTOMY AND GASTROSTOMY

Case 3. Male, aged 64 years had had gradually increasing difficulty in swallowing and weight loss over a period of 3½ months. Roentgenography and biopsy established a diagnosis of carcinoma beginning about four inches above the cardiac end of the stomach. A gastrostomy was first performed. Two weeks later the lesion was approached through the thoracic incision previously described; the tumor was markedly adherent to the surrounding mediastinum but it was freed and the diaphragm opened. Glands were found on the lesser curvature. The involved lymph nodes were removed, the oesophagus divided just above the stomach and the distal stump turned in. It was impossible to draw the stomach up high enough for an oesophago-gastrostomy. The diaphragm was closed and the oesophagus freed with the hand up to the thoracic aperture. The chest was closed with catheter drainage and the air exhausted. An incision was then made along the lower border of the left sternomastoid muscle and the oesophagus freed and brought out through the wound, after which the tumor was cut off. The patient had a rather severe postoperative course for three days but recovered.

*Since writing this 3 more successful transthoracic resections of the oesophagus have been performed. In one the carcinoma was at the level of the aortic arch. In two the carcinoma was of the cardiac end of the stomach with obstruction of oesophagus. They were both treated by resection of the tumor bearing portions of oesophagus and stomach followed by intra thoracic oesophago-gastrostomy.

A rubber and glass tube connection between the oesophageal opening in the neck and the stomach was established so that most of the time food and drink were taken through it. Signs of intrathoracic recurrence developed after one year and the patient died 16 months after operation.

Case 4. Male aged 46 years had a carcinoma of the oesophagus at the level of the tracheal bifurcation which had produced symptoms for three months. A gastrostomy was performed. Ten days later the chest was opened and the tumor resected by a technique similar to that in Case 3 except that the diaphragm was not opened. The patient made an uneventful recovery and is using an artificial tube oesophagus three months after operation.

Case 5 was a male aged 51 years who presented a carcinoma at the level of tracheal bifurcation producing symptoms for seven months. It was resected in a manner similar to that reported in Case 4. The patient died seven days after operation from mediastinal infection. Two lung metastases were found at autopsy.

Case 6 was that of an elderly male whose tumor was located at the level of the tracheal bifurcation. It was resected in a similar manner. At operation there were adhesions to the posterior wall of the lower part of the trachea and the trachea was entered at operation. After closure of the wound there was leakage of air through the tracheal opening into the chest and the patient died 15 hours after operation.

SUMMARY AND CONCLUSIONS

This series of six cases of resection with three survivals (3 additional survivals at time of proof reading) and one patient free from recurrence 2⅓ years after operation, coupled with other favorable reports, demonstrates the feasibility of radical operation for early recognized carcinoma of the oesophagus. In four of the cases the lesions were advanced at the time of operation. It cannot be too greatly emphasized that if the public and the profession were to become mindful of this disease so that every patient developing symptoms of oesophageal obstruction would be subjected not in three to seven months as in these cases but immediately to roentgenography, oesophagostomy and biopsy, the diagnosis could then be established and a high percentage of resections performed. With increased experience the operative mortality would be greatly reduced just as it has been in cast of lobectomy and pneumonectomy during the past ten years and the percentage of cures should approach that of carcinoma of the stomach (which according to Pack amounts to only 3%) because carcinoma of the stomach does not as regularly produce obstructive symptoms and consequently is not diagnosable as early as is carcinoma of the oesophagus.

THE USE AND ABUSE OF CHEMOTHERAPY IN OBSTETRICS AND GYNECOLOGY

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It is difficult to define chemotherapy but the term should be used to signify a chemical agent which has therapeutic value against specific organism. When this term was first used is difficult to determine, but Ehrlich employed it in 1910 in his epoch making report of Arsphenamine "Die Experimentelle Chemotherapie der Spirillosen."[1]

The use of mercurial inunctions was recorded in Arabian literature and recognized as having value in certain skin diseases as early as 1000 A. D. Cinchona bark was long known to have value in chills and fever of malaria. Of course, the specificity of the chemical compounds of quinine and mercury was not established until the malarial parasite was identified by Laveran[2] in 1800 and the spirocheta pallida was discovered in 1905 by Schaudinn and Hoffman.[3]

There have been few specific therapeutic agents in times past and their number has not increased rapidly. Syphilis was probably one of the first diseases to yield to specific chemotherapy and much work has been expended on compounds of mercury, arsenic and bismuth in order to determine the safest, quickest and least uncomfortable method of curing this specific contagious disease. Its detection, control and cure have been of the greatest importance particularly in obstetric but also in gynecologic practice. With a few notable exceptions the treatment of bacterial infections has not been based upon specific therapy except where antitoxins and antisera have proved of value. Such treatment is naturally more scientific and depends upon an etiologic rather than a morphologic basis.

During the last few years much attention has been attracted to the sulfonamides, chemical compounds which have more or less curative value in certain serious and acute bacterial diseases. Some of these acute infections involve the female genito-urinary tract and become of interest to the obstetrician and gynecologist,

whose patients are also subject to coexistant diseases which may be amenable to these specific agents. The development of chemotherapy has altered our concepts of treatment somewhat. With it, recognition of the specific organism becomes of the greatest importance — the site of its activity of lesser significance. The site of infection, however, is not without importance because alteration in morphologic condition affects the physiology of the organs and is related closely to the clinical course of the disease. We must, therefore, in the treatment of patients consider infection from two viewpoints: First, the microorganism and second the organs infected. Indications in combatting the former are to use specific therapeutic agents. Treatment of the latter is to maintain the function of the organ and tissue involved and to attempt ultimate restoration to normal. The present day treatment of infection resolves itself into the specific and the adjuvant and both are essential in securing optimal results. Pneumococcic infection is not an infrequent complication of pregnancy, the puerperium, and the postoperative period.

Formerly the treatment of pneumonia was based upon the diagnosis of the disease process in the lungs and depended upon a variety of drugs, symptomatic treatment and good nursing care. With the development of antisera and rapid methods of typing pneumococci, the treatment became more satisfactory and specific. Now, chemotherapeutic agents have arrived which may be used, if necessary, before typing has been completed and may be administered in conjunction with or without the appropriate antiserum. Combined and symptomatic treatment should not be discarded as such therapy may yield the best results. Surgical treatment, especially drainage of abscesses will continue to be essential. Where localized abscesses develop we have been able to demonstrate the presence of these drugs in the pus. Nevertheless, chemotherapy is entirely inadequate here unless it is supplemented by operative treatment to drain the localized collections of pus. When such abscesses are so located as to be inaccessible to drainage, or are not drained, cure by chemotherapy alone is unlikely.

Mixed infections are not uncommon. One microorganism may be susceptible to the drug, the other may not. It is obvious that nonsusceptible invaders must be overcome by the natural reactions of the patient or by supplemental therapy. The advent of new chemotherapeutic agents in the cure of certain diseases is no reason for the abandonment of other forms of therapy which have proved their value. The patient as well as the disease must be treated. Antisera and antitoxins should not be discarded and adjuvant treatment must continue to be used. Symptomatic treatment must still be recognized as important and vital. Transfusion may be a life saving measure in many cases of infection or of infection complicated by anemia. Specific chemotherapy is to be regarded then as another tool in our armamentarium for combatting certain diseases, and the new agents should be used in conjunction with older, tried and proved methods of therapy.

The basis of the specificity of sulfonamide compounds in bacterial infections is still unknown. According to present methods of classification, these chemical compounds are not specific for any one type of bacteria to the exclusion of all others. They are effective against cocci and bacilli and against Gram positive as well as Gram negative organisms. By some undetermined mechanism they exert a potent retarding effect on the growth of certain microorganisms yet are completely inert to others which appear to be closely related in species, e.g., Streptococcus hemolyticus (beta type) and Streptococci viridans (alpha type) as contrasted with Streptococcus hemolyticus and Escherichia coli. There also seems to be some difference in the effect on the same type of organism when it is located in different sites. Sulfanilamide does not appear to be as beneficial in hemolytic streptococci infections of the throat as of the female genitalia.

The action of these compounds cannot be regarded as limited to the infecting organisms and without effect upon the host. It is important to emphasize that these drugs have no direct effect on the morphologic tissue changes associated with infectious disease processes. The structural and functional changes wrought by the invading organisms cannot be remedied and the tissues restored by the use of this therapy. The administration of these drugs early in the course of the bacterial invasion is essential if the anatomic and physiologic damage of the infections is to be minimized.

These drugs are very potent and one has to be circumspect in their use. The method of administration as well as the amount absorbed must be considered. Administration may be either enteral or parenteral. The amount absorbed is important rather than the amount given. The concentration and effect depend not only upon the amount given, the frequency and regularity of the dosage but also upon the rate and degree of elimination. Patients vary in their degrees of susceptibility to the beneficial and toxic effects of these drugs. This may be due to many factors, idiosyncrasy or impaired bodily function, such as renal impairment, anemia or some peculiarity of the hematopoetic system.

A decision to use sulfonamides should rest on etiologic and scientific considerations. They should be used only in infections in which carefully controlled investigations have proved them effective. Diagnosis depends upon a bacteriologic examination by means of smears and cultures. Puerperal infection may be recognized, but the invading organism must be determined. The sulfonamides are effective against the beta hemolytic streptococcus but not against the anaerobic streptococcus. The use of sulfonamides, in the absence of a bacteriologic diagnosis, is justified only when the patient is seriously ill and delay in obtaining an exact diagnosis might endanger life. If there is no clinical evidence of improvement under trial administration, such therapy should be continued for a few days only and promptly stopped. If it is effective, the appropriate dosage should be continued.

It also seems essential to point out that the use of these drugs in infection against which they have no specific effect is more likely to do harm than good, because their toxic effects may have a harmful effect on the host without any compensatory value in combatting the invaders.

Bacteriologic diagnosis requires proper facilities and a competent bacteriologist, but culture technics and the methods of taking, staining and examining smears from infectious discharges are relatively simple. The actual culture methods employed should be those favoring the growth of both aerobic and anaerobic organisms. A few cc. of blood removed by venapuncture is sufficient for a blood culture. Smears and material for culture from urogenital discharges may be obtained easily in cases of puerperal infection by exposing the cervix, removing the discharge with a sterile dry sponge, and then securing some secretion from within the cervical canal by sterile cotton swabs. These smears and cultures should be obtained as early in the course of the disease as possible. Blood cultures are more apt to be positive if the blood is taken at or about the peak of a temperature reaction or just following a chill.

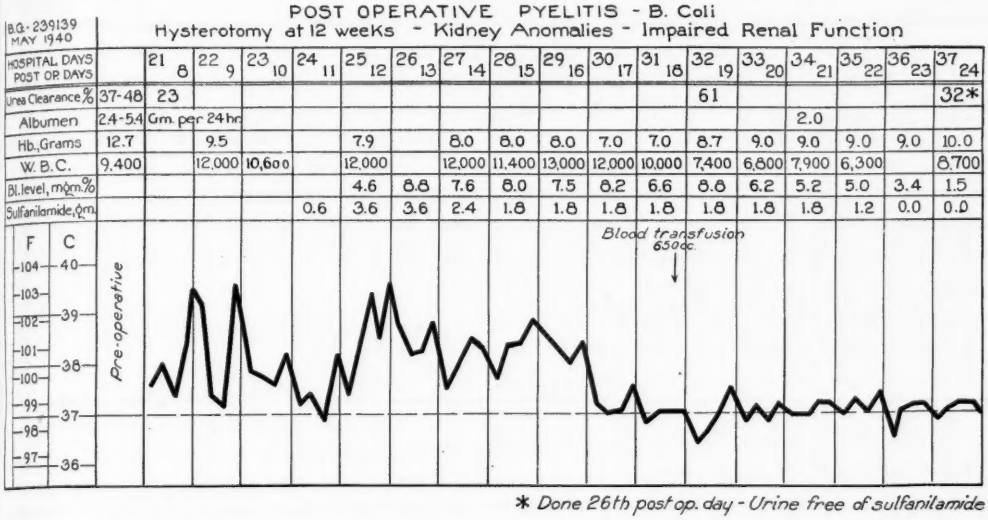
The condition of the patient should influence us very definitely in the use of these drugs. They are not indicated for trivial conditions with which the patient is able to cope with the help of simpler and less toxic therapy. The blood picture, particularly with reference to the hemoglobin, erythrocytes and leucocytes is important. One must use caution in administering these agents in the presence of an anemia or a leucopenia. The functional capacity of the kidneys is of great significance as any interference with proper elimination of these drugs may lead to toxic symptoms due to a high blood level even though the total dosage is not excessive. (Chart I).

It must be remembered that some drugs given concurrently may prove detrimental to the patient by augmenting the toxicity of the chemotherapeutic agents while other types of therapy may supplement them and prove beneficial to the recipient. Certain drugs used in antiluetic treatment and the sulfates and saline laxatives are undesirable for use while the sulfonamides are being given. Sedatives are not contraindicated. In some instances such agents as sodium bicarbonate should be used as protective therapy.

There seems to be a tendency to use these drugs as prophylactic measures where the onset of an infection is feared. At present there is scant, if any, evidence that they have prophylactic value. These agents might even reduce the resistance of the patient if toxic effects were produced.

There are certain fundamental principles about the dosage which must be followed. It must be adequate and appropriate. Too large doses are dangerous and too small doses are ineffectual and may produce a drug fast strain. The administration of these drugs must be at regular intervals. Their efficacy depends upon the maintenance of an effective level of concentration in the tissues and body fluids. A test dose of 0.5 Gm. may be given to be followed by a large

CHART 1



* Done 26th post op. day - Urine free of sulfanilamide

Chart I. Postoperative pyelitis complicated by impaired renal function cured by sulfanilamide therapy. In such a case dosage must be gaged by determination of the drug level in the blood; which was maintained at 5.2 - 8.0 per 100 by a daily dose of only 1.8 Gm.

initial dose of 3.0 Gm. or more so that the blood concentration may be brought more quickly to the desired level. It is best to maintain a fairly constant level at an appropriate or optimal point for the type of infection which is being treated. The drug is not more effective than its lowest level. In serious infections it must be given every four hours day and night. In some instances the interval between doses may be spaced at six or possibly eight-hour periods. Such administration would, however, be for special indications and not for routine management in acute cases. (Tables 1 and 2).

The dosage varies with the type and severity of the infection and reaction of the patient. The administration of the drug should not be continued if there is no clinical improvement within four or five days. If there is improvement, it should be continued by maintaining the higher dosage for a few days and then reduced gradually as the patient improves. It is a mistake to discontinue the administration of these

TABLE I

SULFANILAMIDE* DOSAGE

Severe Infections

A blood level of 1 - 15 mg. per cent should be maintained.

Pounds	Initial Dose	Dose q. 4 hrs.	24 hrs. Dose
150	4.6 Gm. 70 gr.	1.3 Gm. 20 gr.	7.8 Gm. 120 gr.
125	4.0 60	1.0 15	6.0 90
100	3.6 55	1.0 15	6.0 90

Less Severe Infections

A blood level of 4 - 8 mg. per cent should be maintained.

Pounds	Initial Dose	Dose q. 4 hrs.	24 hrs. Dose
150	3 Gm. 45 gr.	0.6 - 1.0 Gm. 10 - 15 gr.	4 - 5† Gm. 60 - 75 gr.
125	2 30	0.6 - 1.0 Gm. 10 - 15 gr.	4 - 5† Gm. 60 - 75 gr.
100	2 30	0.6 - 1.0 Gm. 10 - 15 gr.	4 - 5† Gm. 60 - 75 gr.

*Sulfanilamide is available in 0.33 Gm. (5 gr.) and 0.5 Gm. (7.5 Gr.) tablets.
†0.5 Gm. (7.5 gr.) of sodium bicarbonate may be given with each Gm. of Sulfanilamide.
Dosage decreased with improvement of patient.

Table 1. Sulfanilamide dosage.

TABLE II

SULFAPYRIDINE* DOSAGE
Pneumococcic Infection

Initial Dose	Dose q. 4 hrs.	Total Dose
2-4 Gm. 30-60 gr.	1 Gm. 15 gr.	16-25 Gm. 240-375 gr.

Gonococcic Infection

Dose q. 4 hrs.	Dose q. 6 hrs.	Daily Dose	No. days	Total Dose
0.5 Gm. 7.5 gr.		3 Gm. 45 gr.	2	
	0.5 Gm. 7.5 gr.	2 Gm. 30 gr.	4	14 Gm. 210 gr.

*Sulfapyridine is available in 0.5 Gm. (7.5 gr.) tablets.
In severely ill patients sodium sulfapyridine 0.06 Gm. per kg. may be administered intravenously.
Sulfathiazole dosages are approximately the same as those of sulfapyridine.

Table 2. Sulfapyridine dosage.

reduced doses until the infection is well eradicated as there may be a relapse, which is due probably to the bacteriostatic rather than the bacteriocidal action of these drugs.

This discussion will be limited to a consideration of but three of the sulfonamides, namely, sulfanilamide, sulfapyridine and sulfathiazole. Some of the azo dye types of compounds such as prontosil, neoprontosil, rubiazol, etc. were used earlier but most of them have been discarded. Most observers feel that the activity of such azo compounds is due to the fact that they are broken down in the body to yield sulfanilamide. There are many preparations on the market which are known under manifold trade names. It is of great importance in specific therapy to know the exact compound which is being used. The multiplicity of names has led to much confusion and to improper or inadequate therapy. One must decide which compound to use and then ask for it by its official and scientific rather than by its trade name.

Sulfanilamide (para - aminobenzenesulfonamide) is the name of a definite chemical compound. It cannot be patented or copyrighted. It is marketed under the trade names prontylin, prontosil album, streptocide, sulfonamide-p, etc. This compound is acknowledged to be effective against the beta hemolytic streptococcus (Lancefield A, but of doubtful value in B, D and G), the meningococcus, the gonococcus, Escherichia coli and Clostridium welchii. It may have some value in staphylococcic infections of the urinary tract, but there is little evidence that it is effective in the treatment of septicemia or localized infection due to this organism. It is of no value in pneumococci infections except possibly type III, and is not effective against anaerobic streptococci or streptococcus viridans.

Sulfapyridine (2-sulfanilamidopyridine) is a newer compound than sulfanilamide, and its value is not as well established. Its effectiveness in the treatment of most types of pneumococcic infections seems to be proved. Its superiority to sulfanilamide in the treatment of infections with the gonococcus is probable. Experimental evidence points to an equality with sulfanilamide in the treatment of infections with beta hemolytic streptococcus, meningococcus, etc., but clinical proof is still lacking. Most of the clinical investigation has been with pneumonococcic infections, and though a few cures of staphylococcus septicemia have been reported, they are exceptional. It is more toxic than sulfanilamide.

Sulfathiazole (2-sulfanilamidothiazol) is still in the experimental stage, but here evidence points to an effectiveness equal to sulfapyridine as well as particular value in staphylococcus infections. As yet, there is a dearth of clinical investigation, and its value is not clearly or finally established. It appears to be less toxic than sulfapyridine.

Administration of the drugs may be oral which is preferable, or parenteral if necessary. Sulfanilamide may be given by the latter method in solutions freshly prepared daily. These may be made by dissolving the crystalline compound in

physiologic saline solution, isotonic sodium lactate or Hartmann's solution. The latter have the advantage of requiring no concurrent use of sodium bicarbonate (Long and Bliss).[4] Ten Gm. of the crystalline compound may be dissolved in 1000 cc. of saline solution which has been heated to boiling and removed from the flame. It may then be boiled if desired, but not longer than five minutes. A soluble sodium salt of sulfapyridine is available in ampules ready for use.

Toxic signs are of definite importance but have varying significance. There are certain minor toxic manifestations such as cyanosis, gastrointestinal and certain cerebral disturbances such as confusion and disorientation. The more serious toxic manifestations are shown by: 1, rapidly developing anemia of the hemolytic type; 2, jaundice; 3, leucopenia associated with an agranulocytosis; 4, diminished kidney function with improper elimination and cumulative concentration of the drugs; 5, hematuria and evidence of renal calculi caused particularly by sulfapyridine; 6, sudden and persistent unexplained fever especially after the fifth day of drug use; and, 7, severe dermatitis. The development of these more serious manifestations call for a prompt discontinuance of the drug. These toxic signs are not always due to an overdosage of the drug but may be more properly attributed to individual idiosyncrasies (Chart 2) which arise in a small percentage of the cases, not exactly determined but probably not in excess of from three to five per cent.

There are certain clinical groups of diseases in which the obstetrician and gynecologist has a special interest. Puerperal infection has been an obstetric nightmare for ages. The history of our progress in combatting this fateful disease is a fascinating chapter in human progress. Prophylaxis continues to be of the greatest importance, but its treatment received a great impetus with the discovery of prontosil. This disease is caused by several organisms. The work of Colebrook[5] and others has proved that when the infection is due to beta hemolytic streptococci (Lancefield A) the mortality can be markedly reduced to approximately eight per cent. whereas with corresponding treatment of Lancefield (B, D, and G) types of streptococci infections the mortality is about five times as great. Sulfanilamide therapy has been shown to be of value in puerperal infections of other types, notably the uniformly fatal malady of gas bacillus infection (Clostridium welchii). It probably would be helpful in puerperal infections with Escherichia coli and Neiserria gonorrhoeae. There is no evidence to support its use in puerperal infections due to anaerobic streptococci or to staphylococci. Sulfapyridine should be of greater value in the therapy of puerperal infections due to the pneumococcus and perhaps the gonococcus. It is to be hoped that in sulfathiazole our therapeutic armamentarium may acquire an agent which is effective against staphylococcus puerperal infections. (Chart 3 and Chart 4).

CHART 2

F.C. 237.620 MAR. 1940	PRENATAL PYELITIS - B.Coli. Acute Anemia*							
HOSPITAL DAYS	1	2	3	4	5	6	7	8
Hemoglobin, Gm.	9.8		7.2	9.5	9.1	8.3		9.0
R.B.C.	2,700,000		1930,000	2910,000	2560,000	2560,000		
W.B.C.	15200	18,150	13,000	8,200	8,150	9,950	10,500	10,100
Cell volume %	28		19	28	26	24		27
Bl. level mg. %			4.4					
Sulfanilamide, Gm.	3	3						
Blood transfusions, cc.			650		750	500		
			Pallor, headache, restless Obvious icterus within 3 hrs.					

*Toxic reaction

Chart 2. Acute toxic symptoms (sharp fall in red and white blood count) produced after only 6 Gm. (90 gr.) of sulfanilamide had been administered.

CHART 3

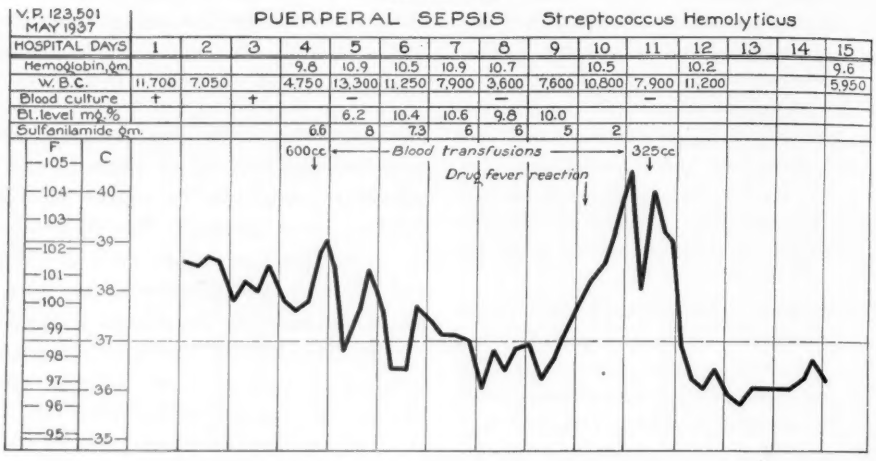


Chart 3. Response to sulfanilamide in a case of septecemia caused by Str. hemolyticus followed by a temperature rise the fifth day after therapy had been begun (possible drug fever reaction).

CHART 4

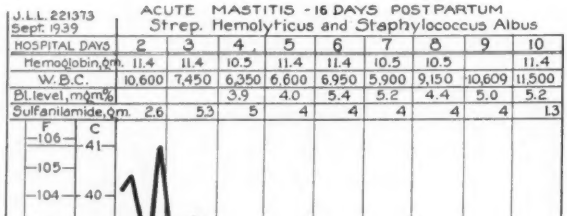


Chart 4. Rapid response to sulfanilamide therapy of a case of acute mastitis due to a mixed infection (Str. hemolyticus and S. albus).

Urinary tract infections with organisms other than the gonococcus are frequent in both obstetric and gynecologic practice. These are rarely due to the streptococcus except in cases of septicemia. The staphylococcus, for which we have no specific chemotherapy, occasionally invades the urinary tract. The most common offending organism is the Escherichia coli. Mandelic acid preparations were for a time thought to be more or less specific for this group, and while they are effective in some instances, the results have not fulfilled our hopes in most cases of pyelitis. Sulfanilamide has proved of value in many cases and alleviation, if not cure, is frequently obtained.

Pyelitis during pregnancy presents a complicated problem because of ureteral obstruction, dilatation and stasis. In treating these cases one has to bear in mind that poor urinary drainage is unfavorable to cure but favorable for the formation of calculi. It is also possible that renal function may be impaired by a hydronephrosis and a pyelonephritis. The urine should be alkalinized[6] and the urinary output about 1000 cc. A drug level of 4 to 5 mgm. per cent. in the blood is all that is necessary. The urinary level of concentration may also be important. Urine cultures should be rendered sterile if possible, and then the dose should be gradually decreased.

CHART 5

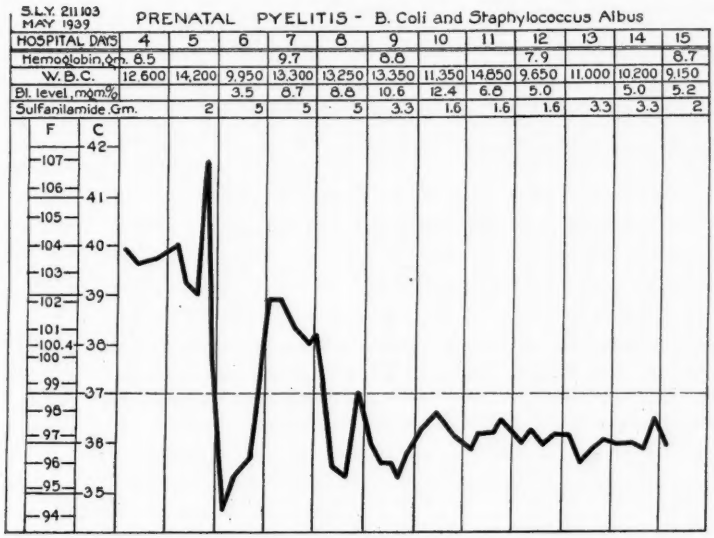


Chart 5. Rapid response to sulfanilamide in the treatment of a case of prenatal pyelitis caused by a mixed infection (E. coli and S. albus).

Cure is unlikely to occur during pregnancy or in the presence of stone or other ureteral obstruction. Clinical improvement occurs even in these cases. According to Douglas[7] and other observers the majority of otherwise uncomplicated cases are cured. (Chart 5)

Treatment and prevention of spread of gonococcal infection of the female genitourinary tract has been a puzzling problem for generations. Sulfapyridine seems to offer the greatest promise. There is still some difference of opinion as to when, how, and over what period of time it should be used. Accuracy of diagnosis is important and controlled dosage is essential. The former depends upon the smear and culture methods. The latter is secured by the means already discussed. Reinfection and relapses must be avoided by strict hygiene and adjuvant treatment. Here, as in other infections, supplemental medical and surgical procedures cannot always be avoided. The criterion of cure depends upon repeatedly negative smears and cultures. The former cannot be omitted but the latter are much more reliable and conclusive. Usually symptoms of acute infections subside in a few days. Complications are fewer and reported relapses are probably due in many instances to insufficient evidence of cure by careful culture control. Dependence upon smears alone is apt to lead to unjustified conclusions relative to cure. The causes of failure are due, in some cases at least, to lack of continuity in the treatment, the neglect of adjuvant treatment such as diet, hygiene and rest, and the use of false criteria of cure. Subsidence of symptoms, negative smears and incomplete follow-up with cultures are not satisfactory evidence of cure. (Table 3)

Of infections which complicate pregnancy, pneumonia is one of the most serious. It contributes about one-half of the fatalities due to coexisting diseases. Its incidence during pregnancy is not usually high. It is much more serious in the pregnant than in the non-pregnant woman. The treatment, therefore, is of great importance as not only one but two lives may be saved. Sulfapyridine is specific for pneumonococci but should not be used to the exclusion of other therapy such as antisera and oxygen. Various clinicians have reported much lower mortality rates with than without its use. Evans,[8] Pepper,[9] Lord,[10] Abernethy,[11] and others advocate its use in doses which will secure a blood level of about 7 mgm. per cent. Sodium sulfapyridine may be used intravenously to obtain more prompt action. (Chart 6)

The obstetric patient presents a special prob-

TABLE III

GONNOCOCCAL INFECTION
Comparison of Therapies

Cured

	Total Cases	Discharged	Probable Cures	Cured	% Cured
Local	41	2	6	8	19
Sulfanilamide	46	14	18	32	70
Sulfapyridine	63	19	26	45	71

Not Cured

	Total Cases	Never Negative	Relapsed	Not Cured	No evidence of Reinf.	% Failures
Local	41	33				
Sulfanilamide	46	8 (3? reinf.)	6 (3? reinf.)	33		80
Sulfapyridine	63	4 (all? reinf.)	14 (10? reinf.)	14	8	17
				18	4	6

Table 3. Comparison of chemotherapy (sulfanilamide and sulfapyridine) and local management in the treatment of gonococcal infection.

CHART 6

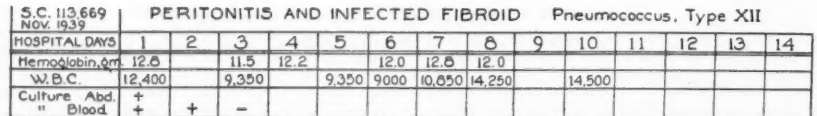

S.C. 113.669
NOV. 1939
PERITONITIS AND INFECTED FIBROID Pneumococcus, Type XII
HOSPITAL DAYS 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Hemoglobin, gm. 12.8 11.5 12.2 12.0 12.8 12.0
W.B.C. 12,400 9,350 9,350 9000 10,850 14,250 14,500
Culture Abd. + Blood + + −
Bl. level, mg.% 5 12.8 12.4 11.9
Sulfapyridine, gm. 7 6 6 6 6 4 4 4 4 1
Serum units 200,000 100,000 ←Antipneumococcic serum
F C
104 40
103
102 39
101
100 38
99
98 37
97
96 36

Chart 6. Gynecologic complication, peritonitis due to the pneumococcus. Response to sulfapyridine and antiserum.

TABLE IV EFFECT OF SULFANILAMIDE ON THE UNBORN RABBIT FETUS

Dosage	Does: Total	Does: Comment	Young: Total Born	Young: No. of Deaths*	Young: Per Cent Deaths	
Controls (no drug)	10	On time	73	16	21.9	
0.5 Gm. per kilogram	20	12 on time	79	46	58.2	63.1
		8 early	62	43	69.3	
0.25 Gm. per kilogram	20	16 on time	140	44	31.4	35.2
		4 early	22	13	69.0	

* Fetal and neonatal deaths, but not those killed for the experiment.

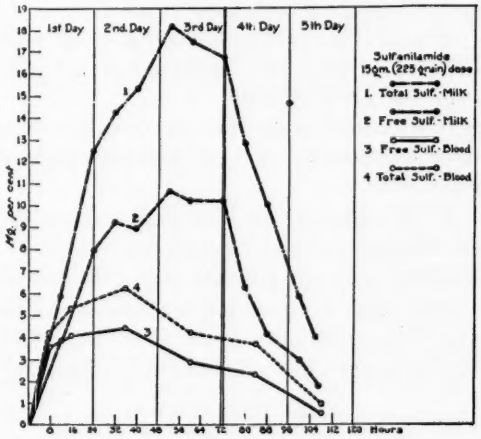
lem as one must envisage the possible effect on the fetus in utero and upon the nursing infant. These drugs should be used with consideration during pregnancy as they may have a detrimental effect on the embryo or fetus. In June, 1938[12] we reported the transplacental transmission of sulfanilamide to the human fetus. This was previously known for animals[13] and has subsequently been confirmed for humans.[14] While it is possible to demonstrate a harmful effect on animal fetuses (Table 4), the dose is relatively large and there is no proof that the proper dosage in pregnant women harms the fetus. Such a possibility should always be born in mind where large doses are used or the administration is prolonged and especially if the mother manifests toxic symptoms. It can be pointed out that no damage to the human fetus has been reported in instances where these drugs have been administered during pregnancy, and it should also be stressed that the infections against which they were used were in themselves harmful to the human fetus. We do not argue against their use under such circumstances but wish only to point out that the sulfonamides should be used only in the pregnant state for conditions which are of more than trivial importance.

It is known that sulfanilamide and probably other sulfonamides are eliminated in the milk,[15] (Chart 7) but the percentage excreted is so small that there is probably little danger to the nursing infant unless it is unusually susceptible. (Table 5) Even though the amount received by the nursing infant may not be toxic, one should be constantly aware of the fact that the lactating breasts excrete definite amounts. When breast feeding is not contraindicated by a serious status of the mother, it is necessary to keep in mind that the baby would receive a minimal but continuous dosage through its mother's milk. The condition of the nursing baby should be watched especially where the mother is receiving maximal doses with a high blood level over a relatively long period of time.

SUMMARY AND CONCLUSIONS

For many years chemotherapy has been successful in the treatment of certain diseases due to protozoa and spirochetes. Recently, more or less specific agents known as the sulfonamides have been introduced for the treatment of certain bacterial infections. These agents are not specific in their activity against any one species of organisms but have a selective action against some and no demonstrable effect against others. The mechanism of their behavoir is not known. They are potentially toxic to the host and may produce

CHART 7



Comparison of the free and total sulfanilamide levels in the milk and blood. Dose 15.0 gm. (225 gr.).

TABLE V

THE RELATIONSHIP BETWEEN THE AMOUNT OF DRUG CONJUGATED AND THE AMOUNT OF DRUG INGESTED, THE AMOUNT OF DRUG EXCRETED AND THE VOLUME OF MILK SECRETED

Groups	Patients	Total Dose	Excreted in Milk	Mg. Per C.C.	Total Dose Per Cent	Excreted as Acetyl
A	10	2.00 gm.	3.7- 13.7 mg.*	0.006-0.02		
B	10	4.00 gm.	11.8- 54.0 mg.*	0.02 -0.04		
I	10	7.33 gm.	38.7- 93.4 mg.	0.04 -0.07	0.53-1.23	35.11-60.99%
II	5	12.00 gm.	50.3-166.4 mg.	0.07 -0.18	0.45-1.40	35.34-46.00%
III	10	15.00 gm.	64.5-233.3 mg.	0.11 -0.20	0.45-1.62	45.16-83.98%

* Free sulfanilamide only.

serious toxic results. The use of specific therapy requires greater exactness in diagnosis.

It is important to know which compound is most effective against a given type of infection. In order to avoid confusion and mistakes, official rather than trade names should be used when these drugs are purchased.

Treatment should be instituted early and carried through properly and systematically to a conclusion. The dosage should be accurate, adequate and regular. It should be properly controlled at a blood level which has been found best for the type of infection under treatment. The treatment, if beneficial to the patient, should be continued sufficiently long to ensure against a relapse. It should not be continued over a long period of time if no clinical improvement is apparent. The administration of the drug should be discontinued if major toxic symptoms develop. It is dangerous to use these drugs without proper control for too long a period of time or without being cognizant of developing toxicity.

It is an abuse not to use them early in infections where they may be beneficial but they should be used accurately.

It is an error to use them in the treatment of infections upon which they have no beneficial action.

It is a mistake to use them to the exclusion of other means of therapy which contributes to the comfort, safety and ultimate cure of the patient.

There must be satisfactory evidence of eradication of the infection and cure of the patient before therapeutic measures are discontinued.

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THE AGEING HEART

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With the prolongation of life that has occurred as result of improvement in the pre- and postnatal care of the infant, with the decline in the death rate from tuberculosis, with the very general institution of personal hygienic and public health measures, there has resulted definitely in this country an increase in the number of older people, older in the sense that they have passed the age of 50 in so far as the text of my talk is concerned. Dublin[1] has pointed out that, in 1850, more than half of the total population of this country was under 20 years of age; that in every census taken regularly each decade, this percentage has gradually fallen. In 1900 the young people represented slightly under 45 per cent of the population; in 1930, 39 per cent, and in the last census the figures have now dropped to 36.7 per cent. As the number of young people fell proportionately, at the same time the number of old people, that is people passed the age of 65, showed a marked percentage increase. In 1850, of the total population, only 2.6 per cent had passed the age of 65, in 1900 it was 4.1 per cent and in 1935 the percentage was approximately 6. It is estimated that by 1980 people passed the age of 65 will represent 14.4 per cent of the whole population, with the naturally associated corollary that the percentage of younger persons will be correspondingly diminished. As the incidence of such diseases as tuberculosis and diabetes, cancer, the infectious diseases, generally diminish or as these diseases are controlled, it naturally follows that as the cause of death cardiovascular renal disease will be a more important factor in causing death than it is now.

Oration on Medicine, 101st Annual Meeting, Illinois State Medical Society, Chicago, May 20, 1941.

As a matter of fact as of today, it is familiar to all physicians and to most of the educated laity that heart and vascular diseases cause more deaths than any other one disorder. The figures supplied by Dublin show that a child at its birth will have 45 chances in 100 of dying as result of cardiovascular renal disease. The young man at the age of 30 will have 52 chances in 100, and by the time the individual gets to the 60 the chances are 6 in 10. As the population increases its age span, the deaths as result of cardiovascular renal disease will become more and more common. While in a broad sense cardiovascular renal disease really represents arterial disease primarily, nevertheless the expression of the arterial disease may be primarily in the heart or kidney or vessels of the brain. Sometimes the combination of the three is so closely interwoven that it is impossible to tell which of these conditions it is that is causing most of the patient's trouble. However, the heart undoubtedly is of primary importance. It is an old saying that a man is as old as his arteries; to paraphrase that aphorism: a man is as old as the arteries of his heart. Certainly arteriosclerotic heart disease and hypertensive heart disease are causing more deaths now than vascular accidents in the brain, or uremia. As such is the case, it behooves us as physicians to consider the growing importance of the care of the aged and more particularly the care of the ageing heart. Geriatrics already is a science which is growing by leaps and bounds. It is quite possible that 50 years from now this particular subdivision of medicine may have more specialists, and be of more importance, than the specialty of pediatrics.

CAUSES OF AGEING

The factors responsible for a person living a span of years sufficiently to be aged are many and varied. There have been a host of studies made on these various factors, no one of which is of supreme importance. I wish to discuss them in the following order: (1) heritage; (2) economic status; (3) geographic locality; (4) marital state; (5) previous illness; (6) endocrines, and (7) tobacco and liquor.

Heritage: It was Oliver Wendell Holmes, I think, who amongst his many pithy remarks made the statement — to live to an old age, pick your ancestors. Heritage undoubtedly plays a very important part in the longevity of the individual. Time and again I have observed families whose members lived to the eighth or ninth decade of life and when they were 70 were biologically younger than members of other families who were at the age of 40 or 50. The inheritance of tendency to arteriosclerosis will condemn more people to an early death than probably any other one cause. On the other hand, an individual fortunate enough to have ancestors whose arteries do not develop degenerative changes until late in life, that individual is going to live to a ripe old age if he is not cut down by another hereditary disease, cancer, or if he survives the possibility of an automobile accident, or if pneumonia does not supervene.

Economic status is of some minor importance. Naturally it is to be expected that a man who is economically comfortable and can have always an ample and adequate diet and who is not forced to live in close contact with other individuals, is going to have a better chance of living to an old age than is the man who has to undergo the vicissitudes of a hard economic life.

Geographic locality is of some moment. People on the Eastern seaboard have a shorter span of life than those who live in the Midwest. This is explained on the basis of the fact that people lead a more concentrated and active life in the big cities of the East than they would or do on the prairies of Nebraska. As Pearl writes "the length of life is generally in inverse proportion to the rate of living." In so far as the tropical or subtropical portions of the earth are concerned, arterial disease is not as prevalent as in the temperate zones. The explanation of this is probably not due to the direct and actual effect of heat on the body mechanisms but rather the result of the fact that heat slows a person down, life is calmer and more placid in the tropics than in the stimulating temperate zones, furthermore the urban population is greater in the temperate areas of the globe than is the rural. The contrary is true in the warmer sections of the globe.

The marital state also plays a part, it is true but a minor one, in the tendency to live to an advanced number of years. The married man or woman has a slightly better chance of outliving his or her bachelor or maiden friend.

Previous illness is, of course, of extreme importance. The man who has the misfortune to

have many and varied sicknesses in the course of his life will probably die in advance of the man who has a peculiar insusceptibility to infections. The person who has rheumatic fever as a child is likely to die at an early age from rheumatic heart disease. A man who contracts syphilis is going to succumb sooner or later to syphilitic heart disease, paresis or one or another of the tertiary expressions of lues unless of course he has been adequately treated. That most people are not adequately treated is not the fault of the physician but rather the fault of the individual. It should not be forgotten, furthermore, that there are some pathologists who hold that there is distinct "evidence for possible infectious basis for arteriosclerosis" (Winternitz[2]). This is an old concept revived by Winternitz, as it has been shown that micro-organisms may be found in arteriosclerotic plaques.

Endocrine disturbances will bring about early changes, some of them incidental to elevation of blood pressure, some of them the result of primary heart involvement as in the thyroid heart, and some of them due to changes in disposition which may accompany endocrinologic pathology.

The question of *alcohol and tobacco* has agitated the physician, the preacher and the populace for many years. There seems to be an increasing mass of evidence incriminating tobacco and nicotine in advancing the incidence of cardiovascular disease. However, it is advisable to discount to a certain extent the statement of the proponents of the evils of tobacco smoking by calling attention to the fact that the great majority of the adult population of this country smokes. Excessive smoking probably does have deleterious effect on the vascular system. I am not convinced that moderate smoking is harmful to any one. Excesses of any kind, from overeating to fits of rage and anger probably have a tendency to shorten a person's life. As for the use of alcohol, excessive use is harmful but when used in moderation, particularly in later years of life, I believe that alcohol is distinctly indicated. The anteprandial drink sipped quietly and with the consumer thoroughly relaxed quiets him psychically and at the same time has a dilatory effect on the blood vessels.

It is interesting to record the study that Pearl made of some 2,000 nonagenarians and centenarians. Some of these people used alcohol, some abstained; some were smokers, some were not; some ate to excess, others were moderate in their food demands. The only characteristic that was common to all of these people was a placid disposition. They took things easily as they came along and did not let the problems of life and living disturb them.

I have dwelt upon ageing and the causes of age rather to the exclusion of the subject matter of the actual title of the paper which I am presenting, but I believe that these preparatory remarks play an important part in considering the changes that take place in the heart as result of the processes of time. As the individual gets older the blood vessels undergo changes which are known as arteriosclerotic. It should be borne in mind that there is difference in the age of the vessels throughout the body. The anterior descending branch of the coronary matures earlier than most arteries. Biologically if not chronologically this is one of the older arteries of the body. This statement helps to explain why this particular vessel is more likely to become occluded or to rupture than other branches of the coronary or other vessels throughout the body. The intimal and medial changes of advancing years are far more marked in the coronary arteries than in the radial arteries.[3] The coronary arteries rarely show medial calcification (Mönckeberg's sclerosis), a characteristic feature of the muscular and not of the elastic arteries.[4]

The heart is unlike any other tissue in the body in that the heart muscle increases in size and weight as the person advances in years. This is contrary to most other muscular tissue, so consequently the heart weight-body weight ratio decreases as the individual ages.

As the heart grows older the valves begin to show the effect of time. Their pliability is gradually lost, fibrous changs ensue and these changes are more pronounced on the left side of the organ than on the right.

The blood pressure gradually increases but not to the high figures that the laity at least misconstrue as the normal figures for a person of an age passed 60. Williams[5] studied a group of patients over 75 and found in the majority of this group the blood pressure was between 150-160 systolic and the diastolic was between 80-90. Normally the blood pressure should not increase

higher than 150 mm. of mercury systolic with a diastolic that does not change, that is of course assuming that this person does not have other causes to elevate the blood pressure. After the sixth decade of life the blood pressure remains unchanged unless some intercurrent disease is present.

The rate of the heart after birth slowly declines during the first ten years of life. At the time the individual is 30 years of age the rate is pretty definitely fixed and remains there until the fifth decade, when the rate falls slightly, according to Cohn.[4]

The rhythm of the heart is one of the important criteria of degenerative changes in the organ. In younger persons the heart action is usually regular but as age advances premature contractions become common, heart block may make its appearance and transient attacks of fibrillation may occur or the heart may go into fibrillation permanently and yet the patient will show no signs of heart failure, at least at times for many years. Incidentally, I observed a patient with fibrillation which extended over a period of 40 odd years and which was in no way detrimental to a normal existence.

PHYSICAL EXAMINATION

As a person grows old the bony thorax becomes more or less rigid; emphysema develops to a lesser or greater degree, both of which factors make it somewhat difficult accurately to outline the heart by percussion. This difficulty, of course, can be counteracted by having an x-ray of the heart to determine its exact size. Physicians often note that heart sounds are "weak" and "distant." The explanation here is exactly the same as given for the discrepancy that occurs in percussion. Actually the weakness of the heart sound is simply due to the fact that an emphysematous lung overlies the organ, the chest has become rounded and the sounds actually are, in the older person, farther away from the bell of the stethoscope than in the case of the younger individual; they are, therefore, distant only but by no means weak. Accentuation of the aortic second sound is likely to be present after the age of 40 or at least the aortic second sound is louder and clearer than is the pulmonic second. Systolic murmurs are common and have very little significance. They may represent sclerosis of the valves or they may result from atheromatous plaques at or near the aortic valve openings.

SUBJECTIVE SYMPTOMS

Subjective symptoms are of greater value than any other one method of determining the efficiency of the heart muscle, in my opinion. Subjective symptoms are the first evidences that are obtained showing that the heart is beginning to "tire" easily and cannot stand as much as it could in previous years. Of these subjective symptoms I think that the symptom fatigue is as important as any other one symptom. Ease of tire, under circumstances which would not previously exhaust the patient, is of prime importance. Dr. Henry Christian[6] has stressed the importance of this symptom. Dyspnea is the symptom which is always emphasized. An intern taking a history will not ask the patient as to fatigue but always will demand of that patient whether or not he or she becomes dyspneic on slight exertion. Of course it is an extremely important observation.

Another symptom of great importance is anginal pain. Anginal pain is definitely an indication for cessation of muscular and mental activity, severe enough to bring on that particular discomfort or even agony. The occurrence of ectopics which the patient can feel or notes causes more mental distress than it does cardiac. It is disturbing and irritating to the patient to feel, as he describes it, "the heart stopping" temporarily, or "turning over" or "jumping" but the mere presence of ectopics is not an indication for diminution of activities, physical in type, but rather indicates a reduction in the mental activities of the patient. Cough as a subjective symptom is one that is more likely to be an evidence of severe rather than minimal heart failure. With the diminution of cardiac reserve, breathlessness and substernal tightness and ease of fatigue become subjective symptoms of extreme importance. Fall in blood pressure is an objective finding of note.

The electrocardiogram in older people has been studied by numerous observers. Electrocardiographic changes take place as the heart ages. Levitt[7] studied 100 men and women who had no evidence of heart disease. Twenty-six per cent of these people showed distinct electrocardiographic abnormalities. In general it may be said that the electrocardiogram in older individuals is very likely to show low voltage and inverted

T waves. There is an increase in the duration of the QRS and PR interval. In assaying an electrocardiogram in an older person these to be expected changes which might be called normal for an old person should always be borne in mind.

I should like to emphasize that the changes I have recounted are the changes that develop as result of arteriosclerosis or of hypertension. Most of these older people have arteriosclerotic heart disease dependent upon sclerosis of the coronary vessel. Hypertensive heart disease may be present. The two factors of arteriosclerosis and hypertension are so closely correlated that most physicians speak of the cardiac state as hypertensive arteriosclerotic heart disease when hypertension is present; of arteriosclerotic heart disease when hypertension is not dominant.

TREATMENT

"The general biologic process of senescence often proves to be a subtle mechanism of self-preservation." Willius,[8] in this short sentence, has epitomized the self-treatment of the aged heart. The person automatically slows down his activities, he does not force himself as he did in midlife and the whole tempo of existence becomes quieter. However, often this is not enough. The physician should advise the patient to restrict definitely his physical and psychical activities. Rest is of extreme importance. This *rest* for the man who is beginning to show signs of cardiac inefficiency should be definitely regulated and systematically controlled until it becomes a routine and a habit. Rest after meals is of prime importance. Half an hour reading of the newspaper after breakfast, a nap after lunch and relaxing in a comfortable armchair after dinner are measures that should always be carried out. The postprandial midday rest or nap should be at least an hour. Under no circumstance should the patient engage in exercise after eating. The coronary flow is believed to be increased after eating and for a short period of time at least no additional strain should be thrown on the coronary circulation after the ingestion of food. Proof of this statement is substantiated by the frequency with which coronary accidents occur a short time after eating.

Physical and mental effort which produce anginal discomfort or pain should be avoided. The elderly man must learn to live within his limitations. It is remarkable incidentally how physical measures which give pleasure will not produce anginal pain, whereas those which are not associated with a certain amount of enjoyment and which should be no more severe than the former, may occasion or bring about the angina of exertion.

The patient should obtain six to eight hours of sleep during the night. I think it is inadvisable to keep the older patient in bed many hours because of the variations in the dynamics of the circulation that occur between the supine and upright position. Much better is it to have that patient sleep on his back not longer than seven hours and the additional sleep he may require he can obtain by the midday nap. If the patient is restless and cannot sleep well, small doses of one or another of the barbiturates or chloral hydrate are indicated.

In patients who have not reached the retiring age and are obligated by economic duties to work relatively hard during the week, it is an excellent idea to advise them to spend Sunday in bed or loafing around the bedroom completely relaxed and keeping completely dissociated from their usual daily duties.

When speaking of rest, certain physiologic functions of man may produce exactly the same results as are brought about by physical exertion. Straining at stool is an excellent example; sexual stress is another which should be avoided, needless to state; emotional excitement is, of course, deleterious. It is not advisable for the old alumnus to attend the crucial football game of his Alma Mater's season. At every World Series usually half a dozen or more people are carried out who, under the excitement of the contest, have had a vascular accident. I cannot speak of the Kentucky Derby but I have no doubt but that during the running of this classic race that one or more elderly people have suffered heart failure.

If the elderly patient has some physical hobby or recreation to which he is addicted, do not make him stop. He can cut down on the number of holes of golf he plays or he can spend less time in the garden than he formerly did before fatigue indicated that the heart was under a strain. It is extremely unwise to alter materially the plan of living which elderly persons have gradually evolved over a period of years. Do not force them to give up things in which they are interested.

Fortunate indeed is the older person who has a hobby and doubly fortunate is he whose hobby is a household rather than an outdoor one. The athletic minded man who shoots, hunts, fishes and golfs and finally finds that the time has come when he should not enjoy these pursuits is out of luck, but do not make him stop these activities too abruptly, let the length of time spent at the recreation be reduced and let it not be indulged in quite as frequently. More strenuous sports, such as tennis, should have been forgotten years before. Keep the older individual occupied, let him avoid the morbid outlook of old age.

Retirement from business or professional activities is often the signal for a rapid decline. If a man is his own boss, as a professional man is, at least in theory he is, or if he is not his own boss and he can arrange with his employer to work fewer hours a day he is indeed fortunate. The older man who can keep occupied for a part of the day in the occupation in which he has been engaged for many years, is not going to rust out quickly but to wear out slowly, to paraphrase an old saying.

In so far as eating and drinking habits are concerned, a quantitative reduction in food is indicated rather than a qualitative one. Let the older person eat pretty much as he wants but do not let him gain weight as result of a more restricted physical life and possibly also as a result of the overeating which the person who has not much else to do in life, may indulge in. Fortunately nature has a way of taking care of this. Increases in weight are uncommon after a person has passed the age of 60. The weight curve has become stabilized even a decade earlier than this. It is most certainly after the climacteric. It is advisable to eat the heaviest meal in the middle of the day and then follow with a rest as has been mentioned already. The evening meal should be light and before retiring a few sweet crackers and a glass of milk may be conducive to a restful night.

I think that a glass of wine with the evening meal or a highball or cocktail before dinner is relaxing and is advantageous. If a person has consumed liquor almost steadily all his life, do not try materially to reduce his alcoholic intake. If it has not hurt him by the time he is approaching senescence it will not hurt him then and the same rule applies to tobacco.

As Robbins[9] puts it "The treatment of the aged is one that calls for tact, sympathy and consideration on the part of the physician to the patient." Do not try to make too many rules as to his living habits and to the manner in which he exists. Guide him gently but firmly. Let your advice be given in small doses. Slowly and gradually inculcate in the mind of the man whose heart has shown signs of strain that he cannot do this or cannot do that. A spirit of antagonism may be aroused in a man (or woman) who has lead a busy and active life if he is told all of a sudden he must not do this and that and cannot do something else. After all, the average man resents getting old and he resents being told what to do. A tactful approach is of extreme importance.

In the treatment of the older individual, *drugs* should not be of primary importance unless definite heart failure has ensued or early heart failure has evidenced itself, but it is not of this person who has already had failure or beginning failure that I am discussing. There is no indication whatsoever for the administration of digitalis, which drug is so often given in small doses when a man begins to show such signs as slight dyspnea on exertion and ease of tire. Nitroglycerine may be indicated if there is indefinite anginal pain. For these older people, particularly if they are rather high strung, keen and quick and do not sleep well, a dose of phenobarbital twice a day in doses of 0.032 gram is advantageous. For the hypertensive individual I have discarded practically all drugs except sedatives and give to these people either the barbiturates or a combination of chloral hydrate, sodium bromide and peppermint water.

If a man shows definite evidence of coronary disease it is advantageous to give one of the theobromine preparations to increase coronary flow and continue with the drug probably the rest of his life. I prefer theocalcin because I think it is less irritating to the gastric mucosa. Theominal is advantageous to the nervous, constantly keyed-up person but I think it is better to give the phenobarbital alone so the dose may be varied, rather than to give the same dosage persistently. Aminophyllin certainly is of value in the management of a patient whose coronaries are constricted and who has from time to time coronary pain. On the whole, however, I

think theocalcin is as good a preparation as any of these xanthine derivatives for the man who has had the warning signals or who has previously had a coronary attack.

I am not discussing the patient who has had failure but I would like to interpolate a word or two in regard to the use of morphine in a person who has had severe coronary pain. It is often necessary to give morphine to control this pain and to give it in large doses, but morphine is not the ideal drug for the purpose. It sensitizes the vagus and increases coronary constriction. Therefore, as soon as possible it is advisable to replace it with papaverine 0.032 to 0.065 gram as indicated. Atropine should be combined with morphine as in part it counteracts the effect of the drug on the vagus.

SUMMARY

I have attempted to sketch this evening the changes that take place in the heart of the individual who is growing old. I have discussed some of the symptoms and the physical examination of the heart of the older patient. I have presented to you my ideas concerning the treatment of these individuals: Tact, moderation and common sense should be the passwords. Do not let them over eat, or overdo, and do not be too solicitous in handling the older person with an ageing heart.

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Workers caring for patients with tuberculosis can only be shielded from exposure to infection by conscious and conscientious precautions. Emil Bogen, M.D., and Wm. Dunn, M.D., Amer. Rev. of Tuber., March, 1941.

PHENOBARBITAL SHOULD BE GIVEN FIRST IN SMALL DOSES

Because of the potential danger of phenobarbital medication, Daniel L. Sexton, M. D., George M. Pike, M. D., and Arthur Nielsen, M. D., St. Louis, declare in The Journal of the American Medical Association: "It would seem advisable to administer the drug first in small doses, increasing the dosage gradually until the patient's tolerance is established.

"Withdrawal of the drug at the first appearance of the rash is the safest procedure. Even then a severe constitutional reaction may occur, but for the most part a fatal outcome will be averted. The tolerance of phenobarbital depends on individual susceptibility."

The authors say that they are presenting their report of a fatal case because of the few autopsy records available on this subject. The poisonous effects of phenobarbital for the most part are limited to a skin eruption which subsides soon after the withdrawal of the drug, they state. In an occasional case a severe reaction of the body as a whole occurs in which exfoliative dermatitis is one of the manifestations.

Bronchopneumonia has been reported in the majority of autopsy studies, but otherwise the conditions found are inconstant.

The authors' patient was a 39 year old man who was admitted to the hospital with complaints of stomach pain and vomiting of three months' duration. He had had indigestion with belching and pain after meals for many years in varying degrees of severity, but this became so severe in the two weeks prior to entrance to the hospital that he retained practically no food. He stated that he had not taken any medication or drugs before entrance.

A diagnosis of peptic ulcer was made. Because of vomiting, phenobarbital in solution was given beneath the skin three times daily, and atropine sulfate was also given. The patient did very well on this regimen. On the eighth hospital day soluble phenobarbital and atropine were omitted and regular phenobarbital was given three times a day by mouth.

Improvement continued until the twelfth hospital day, when the patient complained of a feeling of general discomfort and the previously normal temperature rose to 103° F. At this time he had no specific complaints and no eruptions. On the following morning the temperature was 104 F. and the patient complained of sore throat and difficulty in swallowing. The skin was covered with a generalized eruption, consisting of red spotted lesions.

Phenobarbital was immediately discontinued. However, with twenty-four hours the lesions of the skin progressed so rapidly that in many places they marked and involved large areas of the skin, which soon began to shed. The patient was semiconscious until his death three days after the appearance of the eruption. Postmortem examination revealed involvement of the lobes of the lungs.

LOGIC THAT LIMPS

Westchester physicians warn against an effort by compulsory health insurance proponents to promote their "nostrum" under the guise of a national defense measure.

An editorial in the *Westchester Medical Bulletin,* published by the county society, asserts that compulsory health insurance is being urged on the claim that "the examination of draftees has resulted in a large number of rejections for physical defects; that the health of the people generally is bad; that the health of the industrial population, upon which defense industry depends is especially bad; that health is necessary for defense; and that, therefore, we must have compulsory health insurance.

"The only thing the matter with this proposition is that the first three premises are completely untenable and the conclusion is absolutely unrelated to the premises," the editorial says.

It points out that the percentage of rejections of draftees is not high, relatively speaking, despite the fact that acceptance standards are considerably higher than in 1917, and that the vast bulk of the rejections are for defects of teeth, eyes, feet, or general nutrition which would not be affected by compulsory health insurance.

Statistics issued by the Metropolitan Life Insurance Company in January, 1941, are cited to show that death rates in the industrial population have improved faster than those of the population as a whole and that the industrial worker now enjoys as long a life as the average citizen.

The editorial inquires: "Why is it necessary to attempt to justify compulsory health insurance upon such an irrelevant bogus proposition as this?" The answer given is "simply because even its most ardent supporters cannot make it stand on its own feet."—*Journal of The State Medical Society of New York.*

The London hospitals have now received much damage from air raids, but their work has gone on, says a London letter to the J.A.M.A. In a recent raid seven hospitals were damaged. These included a large general hospital and a hospital for women. Six wards of one hospital were wrecked when four bombs struck the building, causing the death from shock of some elderly patients. At another hospital two blocks were completely wrecked and four porters were buried in the ruins. One was quickly rescued, but the others were still trapped at the time of the report. Many hospitals have had their roofs ripped off, their windows shattered, and their walls reduced to a pile of rubble. One hospital endured four direct hits on four successive nights. But despite the worst the raiders can do, the hospitals carry on. Thus, at a well-known hospital the medical superintendent, the medical staff, the matron, and the nurses all showed unflinching bravery through a grueling seven-hour ordeal. Their calm comment when the "all clear" signal was given was: "Well, we didn't lose a single patient."

VITAMIN C DEFICIENCY IN FAILURE OF WOUNDS TO HEAL

Vitamin C deficiency may be a factor in the failure of some human wounds to heal, Drs. Charles C. Lund and John H. Crandon, Boston, declare in the *Journal of the American Medical Association* for February 22 as a result of investigations in which one of them went on a scurvy-producing diet and subjected himself to experimental wounds.

To carry out experiments on the development of human scurvy, which results from a deficiency of vitamin C in the normal person, one of the authors went on a scurvy-producing diet from October 19, 1939, until May 7, 1940.

Three months after the diet was started an experimental wound was made on one side of the back of one of the authors. No difficulty in wound healing could be demonstrated in this experiment, they declare. Shortly after five months the first sign of scurvy developed, and, although there was slight lassitude and ease of fatigue in the fourth and fifth months, marked fatigability began only in the sixth month.

At exactly six months a second incision was made in the corresponding position on the other side of the back. Considerable difficulty was encountered in suturing this experimental wound, a condition that had not been encountered in the first wound. However, it was finally sutured and seemed to heal.

"The cutaneous (skin) sutures were removed on the sixth day and adhesive strips applied to protect the skin from tension," the authors say. "On the tenth day the wound was reopened, and as soon as the skin was divided it was found that the tissues under the skin had not healed at all and that the wound contained a firm dry blood clot."

The clot was scooped out, and the wound was then sutured and the physician given vitamin C by means of injection into the vein. This was repeated daily for the next ten days, and the wound healed promptly at this time. At the end of the second ten days another incision was made across the area of the healed wound that had been pulled apart during the previous operation. This revealed normal healing.

The two men declare that "at just what point between three and six months delayed healing begins we cannot say."

As a result of their observations the two men say that a careful study of the vitamin C status of all surgical patients is valuable.

So This is Progress! Progress is determined not by where you are but where you are headed. We were reading this morning an article on vitamins. One of the case histories was about a poor fellow who had a motely assortment of ailments, one of them being tuberculosis. He was given liberal doses of vitamins and he improved so much that at last the doctor was able to discharge him — *to a tuberculosis sanatorium!*

THE SUPPLY AND DEMAND FOR INTERNS

"At present, probably more than ever previously, a need for clear thinking on the subject of the supply of interns in relation to the demand by hospitals for their services is desirable," *The Journal of the American Medical Association* says in an editorial.

"Some hospitals have been unable to secure any interns and others have not secured their usual number. The demand exceeds the supply. The size of senior classes in approved medical schools has remained almost constant since 1934, while the number of appointments available each year in approved hospitals has steadily increased. Although statistics are not yet available, the number of graduates of European schools seeking internships in this country has diminished greatly within the past year. While the number of interns recruited from this source has never been large, the recent decrease has served to accentuate the disproportion between supply and demand.

"The approved medical schools with their present facilities cannot increase the size of their classes without sacrificing accepted educational standards. Furthermore, the function of medical schools is to educate physicians to supply the medical needs of the country, not merely to develop young physicians to meet the demand of hospitals for low cost house staff personnel. Until approved medical schools are able to train more students (assuming that more applicants could qualify for admission) the supply of prospective interns will not increase.

Adequate rest is still the basis of all therapy of tuberculosis. Charles K. Potter, M.D., Contact, Feb. 1941.

The problem of tuberculosis is concentrated in the immediate environment of the "positive sputum" case. Rep. Milbank Memorial Fund, 1928-1940.

Ability to manufacture anti-scurvy vitamin C in the body and ability to resist invasion of the tuberculosis germ are apparently linked. Man requires vitamin C in his diet because he is unable to manufacture it in his body. Patients with tuberculosis seem to use more vitamin C than normal. Men, monkeys and guinea pigs are all susceptible to tuberculosis and unable to manufacture vitamin C. Dogs and rats are able to manufacture vitamin C and are resistant to tuberculosis. T. W. B. Osborn, M.D., and J. H. S. Gear, M.D., Nature, June 22, 1940.

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AMERICAN MEDICAL ASSOCIATION TRIAL: JUDGE'S CHARGE TO JURY

Jury's Findings.—On April 4, 1941, after twelve hours of deliberation, and concluding a trial of eight weeks' duration, a federal district court jury of the District of Columbia brought in a verdict of guilty against the American Medical Association and the Medical Society of the District of Columbia, on charges that these organizations had violated the Sherman Antitrust Law enacted by Congress in 1891. Eighteen individual defendants, including a number of officers of the two medical organizations, were acquitted. On what basis the jury found the societies guilty, and their human agents or representatives not guilty, is not known. Perhaps, because the wording of the Sherman Law, designed some fifty years ago to prevent "restraint of trade," is so loosely phrased and constructed that such a seeming contradiction is permissible.

The question of whether the practice of medicine is a "profession" or a "trade," was not passed on in the recent trial.

Significance of Justice Proctor's Charge to the Jury.—A press dispatch concerning the verdict appears in the press clipping department of this issue (page 294), and gives additional information. Of special interest in Federal Justice James M. Proctor's charge to the jury prior to that body's deliberations. The charge is printed in full in the *Journal of the American Medical Association*, April 12, 1941, page 1700.

Justice Proctor, in answer to requests by the attorneys of both the Government and the defendants, gave instructions to the jury on certain questions of law. Some of the instructions in relation to the status of medical societies and their authority in matters of membership and ethics are of special interest in view of the vast amount of misinformation so often circulated by forces antagonistic to organized and scientific medicine. For the convenience of readers, the following excerpts are given:

The defendants had the lawful right to combine and form corporations and associations for the improvement of the practice of their profession and to advance their interests. They had the right to make reasonable rules and regulations respecting their profession and to ascertain the qualifications and character of their members. They had the right to discipline members who failed to abide by the regulations or rules adopted by the associations in the formation thereof and to suspend or expel from membership any member who failed to abide by the rules and regulations. The fact that the defendants adopted such rules and regulations and disciplined members does not of itself constitute an unlawful combination in violation of the statute. They must have combined together with the intent to injure, obstruct or restrain trade, or they must have intended to do acts the necessary effect of which would be to injure, obstruct or restrain trade.

The individual defendants as physicians had a right to determine with what other physicians they would consult, and their refusal to consult with any particular physician is not of itself illegal.

Physicians have the right to select the hospital in which they choose to treat and operate on their patients; and the refusal of a physician to do business with any hospital because of the composition of its courtesy staff is not of itself illegal.

The defendants American Medical Association and Medical Society of the District of Columbia have the right to adopt rules for just and fair dealing among their members and the right of enforcement of those rules and regulations by such reasonable penalties as they may provide for violation thereof.

The defendants had the right to reach and attempt to reach their objective of advancing the interests of the medical profession by legitimate persuasion and reasoned argument, and to this end they had the right to tell their side of the story and to persuade others, including the Washington hospitals, other physicians, members of Group Health Association, Inc., and the public to utilize and use the defendants' method of practicing medicine, and to use peaceful persuasion, publicity, articles in the press, in publications of defendants, including *The Journal of the American Medical Association*, and all lawful propaganda to have their methods of practicing medicine prevail over those of Group Health Association.

The defendants had the right to write letters or other statements among themselves or to other members of the profession or to the public generally, expressing disapproval of or opposition to Group Health Association and the form of medical service offered by it.

The defendants were entitled, through legitimate persuasion and reasoned argument, to endeavor to support and advance the interests and extension of that type of medical practice believed by the defendants to be in the public interest, without regard to whether such acts hindered Group Health Association, its doctors, members or operations, or any other type or method of medical practice. If they did not go further to conspire to restrain Group Health Association there would be no offense.

I charge you that the defendants have the lawful right, through action taken in their meetings and conferences, to formulate and adopt rules of medical ethics for the control and government of themselves and the members of their societies in the practice of their profession, and the support and maintenance of such principles of medical ethics by legitimate persuasion and reasoned argument or by enforcement of Society rules, laws and regulations, without more, would not constitute unreasonable restraints against Group Health Association, its doctors or members.

Any doctor who voluntarily joined the defendant medical societies was required to comply with the constitution, rules and regulations thereof. No doctor would have the right, as against the wishes of the particular society, to retain membership therein regardless of how valuable or advantageous such membership might be to him, and at the same time wilfully violate any provision of its constitution, rules or regulations.

If a doctor desires to retain membership he is bound to obey the constitution, rules and regulations, since membership therein is entirely voluntary; and if, as a result of his nonobservance, he suffers discipline and possible expulsion from the society, and injury, damage or restraint thus suffered by him or by any corporation by which he might have been employed would, without more, not constitute a violation of the statute.

The Washington hospitals are private institutions under private management and control, and the lawful authority to constitute the medical staffs of such hospitals is vested in the governing boards thereof. Hospitals have a lawful right to make such reasonable rules and regulations for the operation of the hospitals as to the authorities thereof may seem in their best interests. They are lawfully entitled to require obedience to such rules and regulations by all persons dealing with said hospitals, including doctors permitted by the hospitals to practice their profession therein.

The Washington hospitals had the lawful right, if they so desired, to adopt and enact a rule confining their medical staffs to members of the local medical societies, and any restraint resulting thereby to Group Health Association, its doctors, members or operations, would not in itself be a violation of the Sherman Act.

A member of the medical profession duly authorized by law to practice his profession in the District of Columbia is not by reason thereof entitled to practice in any of the private Washington hospitals. Permission to practice in such a hospital is not a right on the part of an applicant doctor but is only a privilege which can be extended or withheld from him at the will of, or in the discretion of, the particular hospital.

If the Washington hospitals or any of them believed that it was in the best interests of such hospital to adopt and enforce a rule confining appointments to the medical staff to members in good standing of local medical societies any such hospital had a lawful right to adopt and enforce such rule, and any resulting injury or restraint occasioned thereby to a particular doctor or other person would not be a violation of the statute.

The defendant American Medical Association had the lawful right, on request of a hospital, to inspect it for the purpose of approving or disapproving it for intern or resident training, and it had a lawful right to approve or disapprove such hospital based on the inspection so made.

The American Medical Association was lawfully entitled to present for the consideration of the hospitals inspected the so-called Mundt Resolution concerning the selection of medical staffs exclusively from the members of local medical societies, and such action on the part of the American Medical Association would not of itself constitute an act of coercion as charged in the indictment. . . .

A defendant does not become a party to a criminal conspiracy simply because he is a member of an association which might so conspire, or because he attends meetings of such organization where such conspiracy may be discussed, nor does he become a party to such conspiracy because he has knowledge of its existence or because he may even approve such conspiracy and its unlawful purpose. Before he can be found to be a member of a conspiracy it must appear that he knowingly and intentionally participated therein with the purpose and intention of aiding and furthering it; and you must find, before you can convict such defendant, that such intent existed beyond a reasonable doubt.

It is not unlawful to conspire and combine to effectuate a lawful purpose by lawful means. The defendants could lawfully combine to protect and support their medical organizations, their methods of professional practice, and the principles of medical ethics, by legitimate persuasion and reasoned argument or by any other lawful means. . . .

If it be true, as defendants claim, that the District Society, acting only to protect its organization, regulate fair dealing among its members and maintain and advance the standards of medical practice, adopted reasonable rules and measures to those ends, not calculated to restrain Group Health, there would be no guilt, though the indirect effect may have been to cause some restraint against Group Health. It would be justified if but an incidental result of reasonable regulation of the membership and affairs of the organization, for the statute comprehends only such restraints as do directly and unreasonably affect freedom of competition in the trades and professions.

In joining the District Society members assumed the duty of compliance with laws and regulations thereof. The right to practice medicine gave a doctor no right to be a member of the Society. Discipline and control of members of a society, within reasonable bounds, are essential. When applied in good faith, under fair rules, without ulterior purpose to injure the business of a member or others, there is no wrong. However, such rules and regulatory actions cannot be justified where the real purpose, or the natural results, are to interfere with free competition. . . .

The hospitals had the lawful right to prescribe rules and regulations governing the use of their facilities by doctors and patients. In their boards was vested the authority to decide what physicians would be allowed the privileges. A doctor had no right to demand them. To grant or refuse the same rested solely with the hospital. Therefore, if denial of privileges to Doctor Selders, or other members of the Group Health staff, represented the voluntary decision of the boards, no question would arise as to the legality of their acts. However, if refusal was arbitrary and to serve a criminal conspiracy against Group Health or their doctors, it would violate the statute. . . .

WHAT THE PEOPLE SAY

Public opinion was sounded out on some interesting points in the recent survey of the care of the sick in Rochester. As noted in the *J.A.M.A.*, one of the questions was to determine the attitude of the public toward medical insurance.

While a decided majority expressed themselves in favor of some type of medical insurance, it was found when these replies were broken down by income classes that few of those in favor of it could afford such insurance and that the "theoretical potential market" for such insurance was only about 17 per cent of the total population. Ninety-five per cent of the public gave a negative answer to the question "Has your family every had any kind of difficulty in securing it when they needed medical, hospital, or nursing care?" Ninety-two per cent stated that they did not know of any family in Rochester that needed such care and was unable to get it.

It may be significant of the confused character of the propaganda for "socialized medicine" that 43 per cent when asked "What, in your opinion, does the term 'socialized medicine' mean?" replied "Don't be suggested by the fact that 80 per cent stated that they had little idea of the meaning of such a term.

That the "family doctor" has not disappeared may be suggested by the fact that 80 per cent stated that when they wished to call a doctor they would "usually go to the same doctor" and that 95 per cent of them preferred an M.D. to any other type of practitioner. —New York State Journal of Medicine.

News of the State

Ogle County Medical Society met on April 24th at Rochelle. Chester Coggeshall gave an illustrated talk on "Treatment of Diabetes Mellitus."

Henry L. Jaffe talked to the President's Civic Council of Champaign-Urbana on April 30th on "Relationship of Tumor Clinics to the Cancer Control Program."

Leon Unger addressed the Society for the Study of Asthma and Allied Conditions in At-

lantic City on May 3rd, subject, "The Treatment of Asthma by the Sulfonamide Drugs."

Ralph Reis and C. A. Aldrich addressed a Maternal Welfare Meeting sponsored by the Knox County Medical Society on May 13th. Doctor Reis spoke on "Why Not Cesarean Section" and Doctor Aldrich spoke on "Habits Belong to Children."

Emmet Keating addressed a group of students at the Carl Schurz High School on May 6th, subject, "The Seven Ages of Man."

Herbert E. Schmitz spoke on "Carcinoma of the Uterus" before the Gynecological Department of the Roseland Community Hospital on May 6th.

Philip Kreuscher addressed the Vermilion County Medical Society on May 6th, subject, "Injury and Deformity of the Spine with Differential Diagnosis and Treatment."

Frank C. Murrah spoke before the Jefferson County Bar Association on May 8th on the subject "The Doctor in Court."

Chester C. Guy addressed the pupils of Englewood High School on "Medicine as a Profession," on May 15th.

Harry A. Oberhelman spoke in a "Career" program at the Austin High School, May 21st. His subject was "Medicine as a Profession."

C. J. Barborka spoke before the annual meeting of the White Gross Guild of the Methodist Hospital, Fort Wayne, Indiana, on May 13th. The title of his address was "Nutrition and Public Health."

Louis N. Katz, Director of Cardiovascular Research, Michael Reese Hospital, delivered the first lecture of the Dr. Samuel D. Gross Lectureship of the Phi Delta Epsilon Fraternity, at the University of Louisville Medical School on May 2nd. The subject of his talk was "The Mechanism of Heart Failure."

J. Sanford Kruglick addressed a group under the auspices of the Jane Addams Housing Project, Chicago, May 20th "General Health" with reference to tuberculosis prevention and control was the subject of Dr. Kruglick's talk. Two films, "Good Bye Mr. Germ" and "Let My People Live," furnished by the Institute, were shown.

Samuel M. Feinberg gave a series of lectures on Allergy at the University of Michigan, Ann Arbor, in connection with the Annual Michigan Postgraduate Program for graduates in Medicine on May 13th. On May 14th, he spoke at Gary, Indiana at the Tenth District Councilor meeting on the subject of "Nasal Allergy."

Theodore B. Bernstein spoke before the Tenth District Councilor Meeting at Gary, Indiana, on May 14th, subject, "Nasal Allergy; Its Management."

M. J. Seifert spoke before the Dept. of Biology, Lakeview High School on May 19th. Subject, "The Gastro-Intestinal Tract."

J. C. Schmidtke delivered the address on May 22 to the graduating class of Sherman Hospital Training School at Elgin, Illinois.

J. P. Greenhill spoke before the New Orleans Obstetrical and Gynecological Society and the Orleans Parish Medical Society in New Orleans on May 16, subject, "The Practical Aspect of Gynecologic Endocrinology."

Harry Culver and John I. Brewer were invited to address the Whiteside County Medical Society on May 27th. Doctor Culver spoke on "Tumors of the Urinary Bladder" and Doctor Brewer discussed "Gynecological Diagnoses."

James H. Hutton addressed the graduation class of nurses from the Ryburn King Hospital, Ottawa, on May 23rd.

John R. Wolff addressed the Logan Square Lodge Women's Auxiliary B'nai B'rith of May 24th, subject, "Prevention of Cancer."

Leon Unger was invited to speak before the South Chicago Hospital Guild on May 28th on the subject, "The Invisible Army."

Jean McBean was invited to address the Nash School Parent Teacher Association on May 28th. She also will address a group of mothers on June 16th on the subject "Sex Education."

James J. Donahue presented the scientific program before the Madison County Medical Society on June 6th speaking on "Diseases of the Gastrointestinal Tract."

The Effingham County Medical Society will hold a nonscientific meeting on June 14th at the Veterans of Foregin Wars Home, Effingham, Illinois, starting with a buffet supper at 6:30 o'clock, and appropriate entertainment.

Deaths

WILLIAM JOSEPH ANDERSON, Chicago; Chicago Homeopathic Medical College, 1898; Rush Medical College, Chicago, 1903; fellow of the American College of Surgeons; past president of the Dickinson County (Mich.) Medical Society; aged 64; died in

February at the Veterans Administration Facility, Hines, Ill.

WILLIAM JOHN BENNER, Anna, Ill.; Washington University School of Medicine, St. Louis, 1903; member of the Illinois State Medical Society; served during the World War; past president and secretary of the Union County Medical Society, and the Southern Illinois Medical Association; formerly member of the school board and city council; aged 64; died, March 3, of brain tumor.

LOUIS BLUMENKRANZ, Chicago; Northwestern University Medical School, Chicago, 1910; aged 52; was killed, March 5, in an automobile accident near Ypsilanti, Mich.

BENJAMIN F. BRAYFIELD, Christopher, Ill.; Kentucky School of Medicine, Louisville, 1892; aged 79; died, March 5.

THOMAS BURGESS, Trenton, Ill.; Rush Medical College, Chicago, 1893; aged 72; died, February 21, in the Deaconess Hospital, St. Louis.

FRANKLIN ALBERT BUTTERFIELD, Oregon, Ill.; Rush Medical College, Chicago, 1880; member of the Illinois State Medical Society; aged 86; died February 17, in a hospital at Freeport.

PERCIVAL LEMON CLARK, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1889; aged 74; died, February 2, in Oklahoma City of myocarditis following an operation on the prostate.

GEORGE CHARLES DITTMANN, Chicago; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1902; member of the Illinois State Medical Society; aged 65; died, March 1, in the Swedish Covenant Hospital, of carcinoma of the stomach.

JOHN HENRY FENELON, Bloomington, Ill.; Rush Medical College, Chicago, 1889, past president of the McLean County Medical Society; aged 76; on the staffs of the Mennonite Hospital and St. Joseph's Hospital, where he died, March 3, of uremia and myocarditis.

JOHN BISHOP HAZEL, Saybrook, Ill.; Hospital College of Medicine, Louisville, Ky., 1906; served during the World War; aged 60; died, March 25, of cerebral hemorrhage.

GILBERT HAMILTON HENRY, El Dara, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1893; aged 79; died, February 24, of diabetes mellitus and arteriosclerosis.

HENRY JOHN HEUSINKVELD, Fulton, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; an Affiliate Fellow of the American Medical Association; for many years member of the board of education, and health officer; aged 81; died, March 13.

WILLIAM EDWIN KIDD, Oak Park, Ill.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1891; aged 70; died, March 19, in the Chicago Memorial Hospital of arteriosclerosis.

PETER GEORGE KOKENES, Springfield, Ill.; St. Louis University School of Medicine, 1927; member of the Illinois State Medical Society; aged 43; died, March 7, in St. John's Hospital of cerebral hemorrhage.

EMIL F. R. LIEBRECHT, Chicago; Jenner Medical College, Chicago, 1912; aged 78; died, March 23, in the Illinois Masonic Hospital of coronary thrombosis.

HENRY AUGUST LONG, Effingham, Ill.; St. Louis College of Physicians and Surgeons, 1907; member of the Illinois State Medical Society; formerly mayor of Effingham; aged 58; died, March 24, in St. Anthony's Hospital of hypertensive cardiorenal disease.

SHEFFIE R. MAY, Mount Zion, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; aged 81; died in February.

BENJAMIN NEWTON NOVY, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; served during the World War; aged 58; died, March 5, in the Michael Reese Hospital of gastric ulcer with hemorrhage.

HARLEY PARKER, Chicago; Hering Medical College, Chicago, 1895; aged 66; died, March 3.

LESLIE RUTHERFORD, Peoria, Ill.; Rush Medical College, Chicago, 1901; president of the city board of health; past president of the Peoria City Medical Society; chief physician for the draft board; at various times president of the staffs of the Proctor Hospital and the Methodist Hospital; aged 61; died, March 28, in the James M. Jackson Memorial Hospital, Miami, Fla., of cerebral hemorrhage.

LUCIEN SMITH, Chapin, Ill.; Rush Medical College, Chicago, 1899; served during the World War; aged 65; was found dead, March 12, of coronary occlusion.

AMUEL B. SPACH, Kenilworth, Ill.; Chicago Homeopathic Medical College, 1886; College of Physicians and Surgeons of Chicago, 1893; member of the Illinois State Medical Society; aged 83; died, February 11, of coronary thrombosis and arteriosclerosis.

JAMES WALLACE WEIR, Sparta, Ill.; Missouri Medical College, St. Louis, 1882; member of the Illinois State Medical Society; aged 90; died, March 2, in the Community Hospital of pneumonia.

GEORGE FRANCIS WOODRUFF, Joliet, Ill.; Reliance Medical College, Chicago, 1909; aged 75; formerly on the staff of the Silver Cross Hospital, where he died, February 16, of lung abscess.

JESSE M. YONAN, Chicago; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; aged 73; died, March 13, of cerebral hemorrhage, arteriosclerosis and arthritis.

CHARLES S. YOUNG, Geneseo, Ill.; Detroit College of Medicine, 1896; member of the Illinois State Medical Society; past president of the Henry County Medical Society; past president of the Iowa-Illinois Central District Medical Association, 1918-1919; for many years president of the board of the Henry County Tuberculosis Sanatorium, Rock Island, and the J. C. Hammond City Hospital; health officer of Geneseo from 1912 to 1918; for many years a member of the high school board; local surgeon for the Rock Island Railway; aged 67; died, March 9, of chronic myocarditis.

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